

# Mark Scheme

## AQA Foundation Mock Set A Paper 2

For AQA GCSE Mathematics (8300)

Foundation tier • Paper 2 (Calculator)

Total 80 marks

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### Key to the marks

|            |                                                                                                             |
|------------|-------------------------------------------------------------------------------------------------------------|
| <b>M</b>   | Method mark: for a correct method that could lead to the correct answer.                                    |
| <b>A</b>   | Accuracy mark: for a correct value or answer that follows from a correct method. The method may be implied. |
| <b>B</b>   | Independent mark: for a correct answer or statement; no method needs to be seen.                            |
| <b>Q</b>   | Quality mark: for a clear, complete and correct explanation or conclusion.                                  |
| <b>ft</b>  | Follow through: credit correct work that uses a wrong value from an earlier step.                           |
| <b>dep</b> | Dependent: can only be given if the mark before it has been given.                                          |
| <b>SC</b>  | Special case: credit for a common misreading that still has some mathematical worth.                        |
| <b>oe</b>  | Or equivalent: accept any equal value or form, e.g. 0.5 for $\frac{1}{2}$ .                                 |
| <b>cao</b> | 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.                                               |
| <b>( )</b> | 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)                                 | Oslo                                                                                 | B1    | Oslo                                                                                                                                                                      |
| 1(b)                                 | 19 °C                                                                                | B1    | 19<br><i>Additional guidance:</i> 5 is a common wrong answer (B0).                                                                                                        |
| <b>Total for Question 1: 2 marks</b> |                                                                                      |       |                                                                                                                                                                           |
| 2(a)                                 | 29                                                                                   | B1    | 29                                                                                                                                                                        |
| 2(b)                                 | 12                                                                                   | B1    | 12<br><i>Additional guidance:</i> $59 \div 6 + 13 = 22.8(\dots)$ scores B0.                                                                                               |
| 2(c)                                 | $\times 7$ (or $+30$ )                                                               | B1    | $\times 7$ or $+30$<br><i>Additional guidance:</i> Accept equivalent wording, e.g. multiply by 7, add 30. Condone $7\times$ . More than one operation in the box is B0.   |
| <b>Total for Question 2: 3 marks</b> |                                                                                      |       |                                                                                                                                                                           |
| 3(a)                                 | 9                                                                                    | B1    | 9                                                                                                                                                                         |
| 3(b)                                 | 5                                                                                    | B1    | 5                                                                                                                                                                         |
| 3(c)                                 | Yes, because both solids have 5 faces.                                               | B1    | Yes with 5 and 5 seen or a correct statement, e.g. they both have 5 faces<br><i>Additional guidance:</i> Yes with no reason, or with an incorrect number of faces, is B0. |
| <b>Total for Question 3: 3 marks</b> |                                                                                      |       |                                                                                                                                                                           |
| 4(a)                                 | 5.685460651                                                                          | B1    | 5.68546 ...<br><i>Additional guidance:</i> Accept answers that begin 5.68546. Common wrong answer 8.44(...) from $\sqrt{14.8} + 9.1 \div 3.2 + 1.75$ scores B0.           |
| 4(b)                                 | 5.7                                                                                  | B1ft  | 5.7 or ft their answer to (a) to 1 decimal place<br><i>Additional guidance:</i> ft their (a) only if it has at least 2 decimal places.                                    |
| <b>Total for Question 4: 2 marks</b> |                                                                                      |       |                                                                                                                                                                           |
| 5(a)                                 | 14, 9, 17, 6, 11                                                                     | B1    | 14, 9, 17, 6, 11 all correct                                                                                                                                              |
| 5(b)                                 | Linear scale from 0; five labelled bars of equal width with heights 14, 9, 17, 6, 11 | B1    | linear scale on the vertical axis starting at 0, at least three values labelled                                                                                           |
|                                      |                                                                                      | B1    | five bars of equal width, each labelled with the way of travelling                                                                                                        |
|                                      |                                                                                      | B1ft  | all five bars the correct height for their scale, ft their frequencies from (a)                                                                                           |

(continued)

| Q                                    | Answer                                          | Marks | Guidance                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------------|-------------------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                      |                                                 |       | <i>Additional guidance:</i> Condone bars with no gaps, or a vertical line chart, for the second B1 only if each is labelled. Bars may be in any order. Ignore any shading.                                                                                                                                                                                                         |
| <b>Total for Question 5: 4 marks</b> |                                                 |       |                                                                                                                                                                                                                                                                                                                                                                                    |
| 6                                    | 0.3, 32%, $\frac{13}{40}$ , 0.33                | B2    | 0.3, 32%, $\frac{13}{40}$ , 0.33                                                                                                                                                                                                                                                                                                                                                   |
|                                      |                                                 | (B1)  | all four correctly converted to the same form, e.g. 0.32 and 0.325, or three in the correct order<br><i>Additional guidance:</i> Accept in converted form, e.g. 0.3, 0.32, 0.325, 0.33. SC1 for the correct order from largest to smallest.                                                                                                                                        |
| 7                                    | Small bag (61p per kg compared with 63p per kg) | M1    | $5.49 \div 9$ or 0.61 or 61, or $15.75 \div 25$ or 0.63 or 63, or $9 \div 5.49$ or 1.63(...) or 1.64, or $25 \div 15.75$ or 1.58(...) or 1.59                                                                                                                                                                                                                                      |
|                                      |                                                 | M1    | both values in a comparable form                                                                                                                                                                                                                                                                                                                                                   |
|                                      |                                                 | A1    | Small bag ticked with 0.61 and 0.63, or 1.63(...) or 1.64 and 1.58(...) or 1.59, or other correct comparable values<br><i>Additional guidance:</i> Other comparisons are fine if complete, e.g. cost of 225 kg ( $5.49 \times 25 = 137.25$ and $15.75 \times 9 = 141.75$ ), or cost of 75 kg (45.75 and 47.25). Values may be in pence. Small bag ticked with no working scores 0. |
| 8                                    | 14 crates, 3 empty spaces                       | M1    | $2000 \div 6$ or 333(...) or 334                                                                                                                                                                                                                                                                                                                                                   |
|                                      |                                                 | M1dep | their $333 \div 24$ or 13.8(...) or 13.9 or 312 or 21 seen                                                                                                                                                                                                                                                                                                                         |
|                                      |                                                 | A1    | 14 crates                                                                                                                                                                                                                                                                                                                                                                          |
|                                      |                                                 | A1    | 3 empty spaces<br><i>Additional guidance:</i> Using 334 boxes: M1M1A1 for 14 crates, A0 for 2 spaces. $2000 \div 144 = 13.8(\dots)$ is M2. 14 and 3 with no working scores 4 marks.                                                                                                                                                                                                |
| 9(a)                                 | $C = 45 + 38h$                                  | B2    | $C = 45 + 38h$ oe                                                                                                                                                                                                                                                                                                                                                                  |
|                                      |                                                 | (B1)  | $45 + 38h$ oe, or $C = 38h + k$ ( $k \neq 45$ ), or $C = 45 + kh$ ( $k \neq 38$ )<br><i>Additional guidance:</i> Accept $C = 38h + 45$ , $C = 38 \times h + 45$ . $C = 83h$ scores B0.                                                                                                                                                                                             |
| 9(b)                                 | £178                                            | B1ft  | 178 or ft their formula with $h = 3.5$<br><i>Additional guidance:</i> ft only if their formula from (a) has a fixed charge and a rate per hour.                                                                                                                                                                                                                                    |

(continued)

| Q                              | Answer                                                                                                                                | Marks | Guidance                                                                                                                                                                                                                                                                                                                 |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Total for Question 9: 3 marks  |                                                                                                                                       |       |                                                                                                                                                                                                                                                                                                                          |
| 10                             | 32.5%                                                                                                                                 | M1    | $\frac{273}{840}$ oe or 0.325                                                                                                                                                                                                                                                                                            |
|                                |                                                                                                                                       | A1    | 32.5<br><br>Additional guidance: Accept 32.5%. 307.6(...) from $840 \div 273 \times 100$ scores M0.                                                                                                                                                                                                                      |
| 11                             | 2:10 pm                                                                                                                               | B1    | 75 (seconds) or 40 seconds = $\frac{2}{3}$ minute oe                                                                                                                                                                                                                                                                     |
|                                |                                                                                                                                       | M1    | lists at least 3 multiples of both 40 and their 75, or $40 = 2^3 \times 5$ and $75 = 3 \times 5^2$ , or 600 or 10 (minutes) seen                                                                                                                                                                                         |
|                                |                                                                                                                                       | A1    | 2:10 pm oe<br><br>Additional guidance: Accept 14:10, ten past two. 2:06 pm (from 600 seconds as 6 minutes) is B1M1A0. Using 115 seconds: B0, then M1 for a correct LCM method with 40 and 115 (920). 3000 (from $40 \times 75$ ) with no LCM is B1MOA0.                                                                  |
| 12(a)                          | 204                                                                                                                                   | M1    | $\frac{85}{250} \times 600$ oe, or $0.34 \times 600$ , or $85 \times 2.4$                                                                                                                                                                                                                                                |
|                                |                                                                                                                                       | A1    | 204<br><br>Additional guidance: 0.34 alone scores M0. 100 (from $\frac{1}{6} \times 600$ ) scores M0A0.                                                                                                                                                                                                                  |
| 12(b)                          | No. A fair dice would give about 42 sixes in 250 rolls, but there were 85 (relative frequency 0.34 is much more than $\frac{1}{6}$ ). | B1    | No with a correct reason, e.g. 85 is much more than 42 (or 41.6), or 0.34 is much more than $\frac{1}{6}$ or 0.17, or 6 occurs about twice as often as the other scores<br><br>Additional guidance: No with no reason is B0. Do not accept "the scores are not all the same" without comparing with the expected number. |
| Total for Question 12: 3 marks |                                                                                                                                       |       |                                                                                                                                                                                                                                                                                                                          |
| 13                             | No. The shop price is £72.25 and the online price is £73.80, so the shop is cheaper.                                                  | M1    | $0.15 \times 85$ or 12.75, or $0.85 \times 85$ oe                                                                                                                                                                                                                                                                        |
|                                |                                                                                                                                       | M1    | $0.2 \times 61.50$ or 12.3(0), or $1.2 \times 61.50$ oe                                                                                                                                                                                                                                                                  |
|                                |                                                                                                                                       | A1    | 72.25 and 73.8(0)                                                                                                                                                                                                                                                                                                        |
|                                |                                                                                                                                       | Q1ft  | No ticked, ft their two prices if M2 scored<br><br>Additional guidance: Working may be in pence. Comparing £12.75 off with £12.30 added is not a valid method on its own. No ticked with no working, or with incorrect working, scores 0.                                                                                |

(continued)

| Q                              | Answer                                                                      | Marks | Guidance                                                                                                                                                                                          |
|--------------------------------|-----------------------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 14                             | $23.55 \leq \text{length} < 23.65$                                          | B1    | 23.55 in the first position                                                                                                                                                                       |
|                                |                                                                             | B1    | 23.65 in the second position<br><i>Additional guidance:</i> SC1 for 23.65 in the first position and 23.55 in the second. 23.64 or 23.649 ... in the second position is B0.                        |
| 15(a)                          | $7n - 3$                                                                    | M1    | $7n$ seen                                                                                                                                                                                         |
|                                |                                                                             | A1    | $7n - 3$ oe<br><i>Additional guidance:</i> $n = 7n - 3$ scores M1A0.<br>$n + 7$ scores M0.                                                                                                        |
| 15(b)                          | Yes, because $7 \times 54 - 3 = 375$ (it is the 54th term).                 | B1ft  | Yes with $7 \times 54 - 3 = 375$ , or $378 \div 7 = 54$ , or $n = 54$ , ft their linear expression from (a)<br><br><i>Additional guidance:</i> Yes with no reason, or “because it is odd”, is B0. |
| Total for Question 15: 3 marks |                                                                             |       |                                                                                                                                                                                                   |
| 16                             | 782                                                                         | M1    | $\pi \times 61$ or 191.6(...) or 1.916(...) m                                                                                                                                                     |
|                                |                                                                             | M1dep | 150 000÷ their 191.6 or 1500÷ their 1.916, or 782.7(...) or 783                                                                                                                                   |
|                                |                                                                             | A1    | 782<br><i>Additional guidance:</i> Using $\pi = 3.14$ gives 783.1(...), so 783 (M1M1A0). Using 61 as the radius ( $\pi \times 122 = 383.2(...)$ ) scores MOM0A0.                                  |
| 17                             | $v = \frac{w + 11}{3}$                                                      | M1    | $w + 11 = 3v$ or $\frac{w}{3} = v - \frac{11}{3}$ oe                                                                                                                                              |
|                                |                                                                             | A1    | $v = \frac{w+11}{3}$ oe<br><i>Additional guidance:</i> Accept $v = \frac{w}{3} + \frac{11}{3}$ .<br>$v = w + 11 \div 3$ without brackets is M1A0 unless recovered.                                |
| 18(a)                          | 0.65; 0.8; 0.2, 0.8                                                         | B1    | 0.65 on the hook-a-duck lose branch                                                                                                                                                               |
|                                |                                                                             | B1    | 0.8, 0.2, 0.8 on the coconut shy branches                                                                                                                                                         |
| 18(b)                          | 0.48                                                                        | M1    | $1 - 0.65 \times 0.8$ or 0.52 seen, or $0.35 \times 0.2 + 0.35 \times 0.8 + 0.65 \times 0.2$ oe, ft their tree                                                                                    |
|                                |                                                                             | A1    | 0.48 oe<br><i>Additional guidance:</i> 0.41 (exactly one win) scores M0A0 unless 0.07 is also added. $0.35 + 0.2 = 0.55$ is M0. $0.35 \times 0.2 = 0.07$ alone is M0.                             |
| Total for Question 18: 4 marks |                                                                             |       |                                                                                                                                                                                                   |
| 19                             | $\sqrt{6.5^2 - 1.8^2} = \sqrt{39.01} = 6.2458 \dots = 6.2 \text{ m (1 dp)}$ | M1    | $6.5^2 - 1.8^2$ or $42.25 - 3.24$ or 39.01                                                                                                                                                        |

(continued)

| Q                                     | Answer                                                          | Marks | Guidance                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------|-----------------------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                       |                                                                 | M1dep | $\sqrt{39.01}$                                                                                                                                                                                                                                                                                                                  |
|                                       |                                                                 | A1    | 6.24(...) or 6.25 and 6.2<br><i>Additional guidance:</i> $6.5^2 + 1.8^2$ ( $\sqrt{45.49} = 6.74 \dots$ ) is M0. Working with 6.2 (e.g. $6.2^2 + 1.8^2 = 41.68$ , $\sqrt{41.68} = 6.4559 \dots$ ) can score M1M1 only if a conclusion compares with 6.5; A0.                                                                     |
| 20                                    | No.<br>$30\,450 \div 0.84 = 36\,250$<br>visitors in 2024.       | M1    | $100 - 16$ or 84 or 0.84                                                                                                                                                                                                                                                                                                        |
|                                       |                                                                 | M1dep | $30\,450 \div 0.84$ or $30\,450 \div 84 \times 100$ oe                                                                                                                                                                                                                                                                          |
|                                       |                                                                 | A1    | No and 36 250<br><i>Additional guidance:</i> Alternative: M1 for $35\,322 \times 0.84$ oe, M1dep for 29 670(.48) seen, A1 for No and 29 670(.48) compared with 30 450. Yes (from $30\,450 \times 1.16$ ) scores 0.                                                                                                              |
| 21                                    | Ash (density<br>$= 2040 \div 3000 =$<br>$0.68 \text{ g/cm}^3$ ) | M1    | $40 \times 25 \times 3$ or 3000                                                                                                                                                                                                                                                                                                 |
|                                       |                                                                 | M1dep | $2040 \div 3000$ oe, or 0.68                                                                                                                                                                                                                                                                                                    |
|                                       |                                                                 | A1    | Ash with 0.68 seen<br><i>Additional guidance:</i> Alternative: M1 3000, M1dep any one of $0.64 \times 3000$ , $0.68 \times 3000$ , $0.72 \times 3000$ , $0.75 \times 3000$ , A1 Ash with 2040 (g) or 2.04 (kg) from $0.68 \times 3000$ . $2.04 \div 3000 = 0.00068$ with no conversion is M1M0A0. Ash with no working scores 0. |
| 22(a)                                 | $-2 < x \leq 3$                                                 | B1    | $-2 < x \leq 3$                                                                                                                                                                                                                                                                                                                 |
| 22(b)                                 | -4, -3, -2, -1, 0, 1                                            | B2    | -4, -3, -2, -1, 0, 1 and no others                                                                                                                                                                                                                                                                                              |
|                                       |                                                                 | (B1)  | five correct and no incorrect, or all six correct and one incorrect<br><i>Additional guidance:</i> Any order. -3, -2, -1, 0, 1, 2 (one omitted and one extra) is B0.                                                                                                                                                            |
| <b>Total for Question 22: 3 marks</b> |                                                                 |       |                                                                                                                                                                                                                                                                                                                                 |
| 23                                    | $41.2^\circ$                                                    | M1    | $\sin x = \frac{8.3}{12.6}$ or $\sin(x) = 0.658(\dots)$                                                                                                                                                                                                                                                                         |
|                                       |                                                                 | M1dep | $\sin^{-1}\left(\frac{8.3}{12.6}\right)$                                                                                                                                                                                                                                                                                        |
|                                       |                                                                 | A1    | [41.2, 41.21] given to 1 dp as 41.2                                                                                                                                                                                                                                                                                             |

(continued)

| Q  | Answer                                               | Marks | Guidance                                                                                                                                                                                                                                                                                |
|----|------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    |                                                      |       | <i>Additional guidance:</i> Accept a full alternative method, e.g. Pythagoras to find the third side (9.48 ...) then tan or cos, scored M1M1A1. 41.20 or 41.203 with no 1 dp answer is M1M1A0.                                                                                          |
| 24 | No. She will have £3497.82, which is less than £3500 | M1    | 1.025 or $0.025 \times 3200$ or 80 or 3280                                                                                                                                                                                                                                              |
|    |                                                      | A1    | 3362                                                                                                                                                                                                                                                                                    |
|    |                                                      | M1    | their $3362 \times 1.02^2$ oe, or 3429.24                                                                                                                                                                                                                                               |
|    |                                                      | A1    | No with 3497.82 or 3497.8(...) or 3498                                                                                                                                                                                                                                                  |
|    |                                                      |       | <i>Additional guidance:</i> $3200 \times 1.025^4 = 3532.2(\dots)$ , so Yes: M1A0M0A0 (M1A1M0A0 if 3362 is seen). Simple interest ( $3200 + 80 + 80 + 64 + 64 = 3488$ ): M1A0M0A0 even with No. Do not accept No with no working. Condone 3497.83 (premature rounding) for the final A1. |
| 25 | 23.8 cm                                              | M1    | $16 \div 6.4$ or 2.5, or $6.4 \div 16$ or 0.4                                                                                                                                                                                                                                           |
|    |                                                      | M1dep | $21 \div 2.5$ or $21 \times 0.4$ oe, or 8.4                                                                                                                                                                                                                                             |
|    |                                                      | M1    | 6.4 + 9+ their <i>BC</i> , where their <i>BC</i> is a value from a scale factor method                                                                                                                                                                                                  |
|    |                                                      | A1    | 23.8                                                                                                                                                                                                                                                                                    |
|    |                                                      |       | <i>Additional guidance:</i> Alternative: M1 2.5, M1dep $DF = 9 \times 2.5 = 22.5$ , M1 $(16 + 21 + 22.5) \div 2.5$ , A1 23.8. $BC = 21 \times 2.5 = 52.5$ (perimeter 67.9) is M1M0M1A0. Using differences ( $21 - 9.6 = 11.4$ , perimeter 26.8) is M0M0M0A0.                            |
| 26 | $110^\circ$                                          | B1    | angle <i>ADC</i> = $3x + 10$ or angle <i>ADC</i> = angle <i>ABC</i> , seen or implied                                                                                                                                                                                                   |
|    |                                                      | M1    | $4x - 10 + 3x + 10 + x + 20 + 3x + 10 = 360$ oe                                                                                                                                                                                                                                         |
|    |                                                      | M1dep | $11x = 330$ oe                                                                                                                                                                                                                                                                          |
|    |                                                      | A1    | $x = 30$                                                                                                                                                                                                                                                                                |
|    |                                                      | A1    | 110                                                                                                                                                                                                                                                                                     |
|    |                                                      |       | <i>Additional guidance:</i> Using only three angles: SC1 for $8x + 20 = 360$ or $x = 42.5$ (no other marks). Using 180 instead of 360 is B1 only (if angle <i>ADC</i> is correct). 30 as the final answer is B1M1M1A1A0. 100 as the final answer (from $x = 30$ ) is B1M1M1A1A0.        |