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# GCSE MATHEMATICS 8300/3F

Foundation Tier Paper 3 Calculator  
Middle Third

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Mark scheme  
June 2025

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Version: 1.0

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

No student should be disadvantaged on the basis of their gender identity and/or how they refer to the gender identity of others in their exam responses.

A consistent use of 'they/them' as a singular and pronouns beyond 'she/her' or 'he/him' will be credited in exam responses in line with existing mark scheme criteria.

Further copies of this mark scheme are available from [aqa.org.uk](https://aqa.org.uk)

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## Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

|                        |                                                                                                                                        |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>M</b>               | Method marks are awarded for a correct method which could lead to a correct answer.                                                    |
| <b>A</b>               | Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied. |
| <b>B</b>               | Marks awarded independent of method.                                                                                                   |
| <b>ft</b>              | Follow through marks. Marks awarded for correct working following a mistake in an earlier step.                                        |
| <b>SC</b>              | Special case. Marks awarded for a common misinterpretation which has some mathematical worth.                                          |
| <b>M dep</b>           | A method mark dependent on a previous method mark being awarded.                                                                       |
| <b>B dep</b>           | A mark that can only be awarded if a previous independent mark has been awarded.                                                       |
| <b>oe</b>              | Or equivalent. Accept answers that are equivalent.<br>eg accept 0.5 as well as $\frac{1}{2}$                                           |
| <b>[a, b]</b>          | Accept values between a and b inclusive.                                                                                               |
| <b>[a, b)</b>          | Accept values $a \leq \text{value} < b$                                                                                                |
| <b>3.14...</b>         | Accept answers which begin 3.14 eg 3.14, 3.142, 3.1416                                                                                 |
| <b>Use of brackets</b> | It is not necessary to see the bracketed work to award the marks.                                                                      |

Examiners should consistently apply the following principles.

**Diagrams**

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

**Responses which appear to come from incorrect methods**

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

**Questions which ask students to show working**

Instructions on marking will be given but usually marks are not awarded to students who show no working.

**Questions which do not ask students to show working**

As a general principle, a correct response is awarded full marks.

**Misread or miscopy**

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

**Further work**

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

**Choice**

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

**Work not replaced**

Erased or crossed out work that is still legible should be marked.

**Work replaced**

Erased or crossed out work that has been replaced is not awarded marks.

**Premature approximation**

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

**Continental notation**

Accept a comma used instead of a decimal point (for example, in measurements or currency), provided that it is clear to the examiner that the student intended it to be a decimal point.

| Q    | Answer                       | Mark | Comments                                                                                                                                                                                                                                                                                                                                         |
|------|------------------------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9(a) | 4 and 9 in correct positions | B3   | B2<br>9 in smallest position and 4 in largest position<br>or only 4 in correct position<br>or only 9 in correct position<br>or $4^2$ in smallest position and $9^2$ in largest position<br>or 16 or $\sqrt{16}$ in smallest position and 81 or $\sqrt{81}$ in largest position<br>B1<br>$4^2$ or 16 or $\sqrt{16}$ or $9^2$ or 81 or $\sqrt{81}$ |
|      |                              |      | <b>Additional Guidance</b>                                                                                                                                                                                                                                                                                                                       |
|      |                              |      | $4^2 = 16$ in smallest position and $9^2 = 81$ in largest position <span style="float: right;">B2</span>                                                                                                                                                                                                                                         |
|      |                              |      | 16, 4 in smallest position and 81, 9 in largest position <span style="float: right;">B2</span>                                                                                                                                                                                                                                                   |
|      |                              |      | $2^2 = 4$ in smallest position is not 4 in smallest position<br>$3^2 = 9$ in largest position is not 9 in largest position                                                                                                                                                                                                                       |

| Q    | Answer                                                                                                                                                   | Mark | Comments                                                                                                                                            |  |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 9(b) | 0.8 <sup>2</sup> ticked<br>with either<br>0.64 and 0.512<br>or<br>$\frac{64}{100}$ and $\frac{64}{125}$<br>or<br>0.8 < 1<br>or<br>suitable worded reason | B1   | oe in comparable form<br><br>fractions must have same numerator or same denominator<br><br>eg multiplying by decimals below 1 makes numbers smaller |  |
|      | Additional Guidance                                                                                                                                      |      |                                                                                                                                                     |  |
|      | Ignore further work after correct values in comparable form                                                                                              |      |                                                                                                                                                     |  |
|      | Condone 0.51 for 0.512                                                                                                                                   |      |                                                                                                                                                     |  |
|      | $\frac{16}{25}$ and $\frac{64}{125}$ (fractions do not have same numerator or denominator)                                                               |      | B0                                                                                                                                                  |  |
|      | 0.8 <sup>2</sup> ticked and squaring makes numbers bigger                                                                                                |      | B0                                                                                                                                                  |  |

| Q     | Answer                                                                                                                                                                             | Mark | Comments                                                                                                                                                                                             |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10(a) | Answer £2<br>and £2, £2, 50p, 5p, 1p                                                                                                                                               | B2   | any order<br>B1 Answer £2<br>or<br>a set of coins which total £4.56<br>or<br>correct modal value for their set of coins<br>SC1 Answer 2 and 2, 2, 50, 5, 1<br>or Answer 2 and 2, 2, 0.50, 0.05, 0.01 |
|       | <b>Additional Guidance</b>                                                                                                                                                         |      |                                                                                                                                                                                                      |
|       | SC1 is for an otherwise correct response with all or some units missing<br>eg Answer 2 and £2, 2, 50p, 5, 1                                                                        |      | SC1                                                                                                                                                                                                  |
|       | Units must be seen on answer and all coins for B2                                                                                                                                  |      |                                                                                                                                                                                                      |
|       | Units must be seen for B1<br>on answer £2<br>or on all coins for a set of coins which total £4.56<br>or on answer and all coins for the correct modal value for their set of coins |      |                                                                                                                                                                                                      |
|       | Accept £0.50, condone £0.50p                                                                                                                                                       |      |                                                                                                                                                                                                      |
|       | Units of the form 0.50p are incorrect                                                                                                                                              |      |                                                                                                                                                                                                      |
|       | Use of one or more coins that do not exist is max B1 for Answer £2                                                                                                                 |      |                                                                                                                                                                                                      |
|       | Answer £2 and 2, 2, 50, 5, 1                                                                                                                                                       |      | B1                                                                                                                                                                                                   |
|       | 2, 2, 50, 5, 1 without answer £2                                                                                                                                                   |      | B0                                                                                                                                                                                                   |
|       | £1, £1, £1, £1, 50p, 5p, 1p                                                                                                                                                        |      | B1                                                                                                                                                                                                   |
|       | Answer 1 and 1, 1, 1, 1, 50, 5, 1                                                                                                                                                  |      | B0                                                                                                                                                                                                   |

| Q     | Answer                                                                                                                                                        | Mark | Comments                              |
|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------------------------|
| 10(b) | ordered list 4 5 8 9 16<br>or<br>ordered list with an extra number<br>(extra may be correct or incorrect)<br>or<br>indication of middle numbers as 6<br>and 8 | M1   | list in ascending or descending order |
|       | 6                                                                                                                                                             | A1   |                                       |
|       | <b>Additional Guidance</b>                                                                                                                                    |      |                                       |
|       | M1 may be awarded for correct work with no answer or incorrect answer,<br>even if this is seen amongst multiple attempts                                      |      |                                       |
|       | 4 5 7 8 9 16 (ordered list with incorrect extra)                                                                                                              |      | M1                                    |
|       | 4 5 8 9 16 1 (ordered list with incorrect extra)                                                                                                              |      | M1                                    |
|       | 4 5 6 8 9 16 (ordered list with correct extra) and answer 7                                                                                                   |      | M1A0                                  |

| Q  | Answer                                                                  | Mark | Comments                                                                                                                                                      |
|----|-------------------------------------------------------------------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11 | $0.7 \times 6 \times 20$ or 84<br>or<br>$1.7 \times 6 \times 20$        | M2   | oe<br>M1 $6 \times 20$ or 120 oe<br>or $0.7 \times 6$ or 4.2 oe<br>or $0.7 \times 20$ or 14 oe<br>or $1.7 \times 6$ or 10.2 oe<br>or $1.7 \times 20$ or 34 oe |
|    | 204                                                                     | A1   | SC2 200 or 220                                                                                                                                                |
|    | <b>Additional Guidance</b>                                              |      |                                                                                                                                                               |
|    | SC2 is from working with 10 or 11 as a whole number of plates per table |      |                                                                                                                                                               |

| Q  | Answer                                                                                                                                                                       | Mark | Comments               |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------------------------|
| 12 | Two mistakes from <ul style="list-style-type: none"> <li>Incorrect line of best fit</li> <li>Incorrect plotted value (4, 20 000)</li> <li>Incorrect y-axis values</li> </ul> | B2   | B1 one correct mistake |
|    | <b>Additional Guidance</b>                                                                                                                                                   |      |                        |
|    | Accept a correct line of best fit drawn on the diagram                                                                                                                       |      | B1                     |
|    | Accept point correctly plotted on diagram (4, 19 000)                                                                                                                        |      | B1                     |
|    | The line is wrong (condone)                                                                                                                                                  |      | B1                     |
|    | Line does not go through the middle of the points (condone)                                                                                                                  |      | B1                     |
|    | The line of best fit isn't going through the points                                                                                                                          |      | B1                     |
|    | Point at 19 000 is wrong                                                                                                                                                     |      | B1                     |
|    | Values go up differently on the vertical scale                                                                                                                               |      | B1                     |
|    | The line of best fit isn't going through any points                                                                                                                          |      | B0                     |
|    | One of the points is wrong                                                                                                                                                   |      | B0                     |
|    | Values on the axis are wrong                                                                                                                                                 |      | B0                     |

| Q  | Answer                                                | Mark | Comments                     |
|----|-------------------------------------------------------|------|------------------------------|
| 13 | $3 \times 5$ or 15                                    | M1   | oe                           |
|    | $4 \times 4 \div 2$ or 8                              | M1   | oe                           |
|    | 15 : 8                                                | A1   | oe ratio<br>ignore any units |
|    | <b>Additional Guidance</b>                            |      |                              |
|    | Ignore attempts to simplify after correct answer seen |      |                              |
|    | 8 : 15 unless from incorrect working                  |      | M1M1A0                       |
|    | $5 + 3 = 8$ or $4 + 4 = 8$                            |      | M0                           |

| Q     | Answer                                   | Mark | Comments                    |
|-------|------------------------------------------|------|-----------------------------|
| 14(a) | $1 - (0.1 + 0.24)$ or 0.66<br>or<br>0.33 | M1   | oe percentages or fractions |
|       | 0.33 and 0.33                            | A1   | oe percentages or fractions |

| Q     | Answer                                                                                                                                                       | Mark  | Comments                                                            |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|---------------------------------------------------------------------|
| 14(b) | $600 \times 0.24$ or 144<br>or<br>$1 - 0.24$ or 0.76<br>or<br>$0.1 + \text{their } 0.33 + \text{their } 0.33$                                                | M1    | oe<br><br>their 0.33 from the table<br>$0 < \text{their } 0.33 < 1$ |
|       | $600 - \text{their } 144$<br>or<br>$600 \times \text{their } 0.76$<br>or<br>$600 \times 0.1 + 600 \times \text{their } 0.33 + 600 \times \text{their } 0.33$ | M1dep | oe                                                                  |
|       | 456                                                                                                                                                          | A1ft  | ft their 0.33                                                       |
|       | <b>Additional Guidance</b>                                                                                                                                   |       |                                                                     |
|       | their 0.33 are their two values for P(green) and P(yellow) from the table                                                                                    |       |                                                                     |
|       | ft their 0.33<br>eg $P(\text{green}) = 0.4$ and $P(\text{yellow}) = 0.2$ $0.7 \times 600 = 420$                                                              |       | M1M1A1ft                                                            |
|       |                                                                                                                                                              |       |                                                                     |

| Q                                                       | Answer                                                                                  | Mark                                | Comments                            |                                     |    |
|---------------------------------------------------------|-----------------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|----|
| 15                                                      | Always congruent<br>Sometimes congruent<br>Never congruent                              | B3                                  | B2 two correct<br>B1 one correct    |                                     |    |
|                                                         | Additional Guidance                                                                     |                                     |                                     |                                     |    |
|                                                         |                                                                                         | Always congruent                    | Sometimes congruent                 | Never congruent                     | B3 |
|                                                         | A's sides are the same lengths as B's sides                                             | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            |    |
|                                                         | A's angles are the same as B's angles                                                   | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |    |
|                                                         | A is an enlargement of B with scale factor 2                                            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |    |
|                                                         | Allow any indication, but if a tick and a cross are used in the same row, mark the tick |                                     |                                     |                                     |    |
| A row with more than one tick is incorrect for that row |                                                                                         |                                     |                                     |                                     |    |

| Q  | Answer                                                                                | Mark  | Comments                                                                         |
|----|---------------------------------------------------------------------------------------|-------|----------------------------------------------------------------------------------|
| 16 | $6x - 8 = 2x + 12$                                                                    | M1    | oe equation in terms of $x$<br>any letter                                        |
|    | $6x - 2x = 12 + 8$<br>or<br>$-8 - 12 = 2x - 6x$<br>or<br>$4x = 20$<br>or<br>$(x =) 5$ | M1dep | oe collection of terms eg $4x - 20 = 0$                                          |
|    | $6 \times \text{their } 5 - 8$<br>or<br>$2 \times \text{their } 5 + 12$<br>or<br>22   | M1dep | a combination of sides may be used<br>eg $14 \times 5 - 4$ or $10 \times 5 + 16$ |
|    | 66                                                                                    | A1    |                                                                                  |
|    | <b>Additional Guidance</b>                                                            |       |                                                                                  |
|    | 5 or 22 may be shown on diagram                                                       |       |                                                                                  |
|    | Trial and improvement with 22 selected as length of side                              |       | M3                                                                               |
|    | Trial and improvement with 5 selected as value of $x$                                 |       | M2                                                                               |
|    | $8x + 4 = 180$ and $x = 22$                                                           |       | M0                                                                               |