Questions matter

## Notes and guidance: Marking guidance

Level 2 Certificate in Further Mathematics (8365)

## LEVEL 2 CERTIFICATE IN FURTHER MATHEMATICS - 8365 - MARKING GUIDANCE

## Introduction

Teachers have told us that they would like to learn more about how to mark like an examiner. Following the success of our online course entitled 'GCSE Mathematics: Mark scheme guidance and application,' and incorporating valuable feedback from teachers, this document endeavours to outline the fundamental aspects of the marking process in Level 2 Further Mathematics.

The examples used in this document are taken from past papers. Our aspiration is that this resource will facilitate a greater understanding of how to apply an AQA mark scheme and improve confidence in awarding marks accurately.

## Types of marks

There are several different types of marks awarded by examiners. M1 means 1 mark, SC2 means 2 marks and so on. Here is a summary of the types of marks used.

| M | Method marks are awarded for a correct method which could <br> lead to a correct answer. |
| :--- | :--- |
| A | Accuracy marks are awarded when following on from a correct <br> method. It is not necessary to always see the method. This can <br> be implied. |
| B | Marks awarded independent of method. |
| ft | Follow through marks. Marks awarded for correct working <br> following a mistake in an earlier step. |
| SC | Special case. Marks awarded for a common misinterpretation <br> which has some mathematical worth. |
| M dep method mark dependent on a previous method mark being |  |
| Awarded. |  |
| B dep | A mark that can only be awarded if a previous independent <br> mark has been awarded. |

## General guidance

If there are alternative methods in the mark scheme, examiners follow one scheme that awards the students the most marks. Students cannot score marks from alternative method 1 and alternative method 2 at the same time, for example.

Students will often work out calculations (or expressions etc) in a different way to that shown in the mark scheme. Accept any equivalent unless a specific form has been asked for. For example, an expression may be shown as a single term or as a product. Note that oe will often appear next to a mark which means 'or equivalent'.

## Awarding method marks (M1)

Examiners will award method marks for either a correct calculation (or expression etc) seen which shows that the correct work has been completed.
The correct calculation (or expression etc) can be seen anywhere, even as the student's final answer to the question.

## Example

Mark scheme says: $6 x$ M1 oe
3.2 A1 oe

## Student response 1

$6 \times x=38.4$
$6 \times x$ seen in working
which is equivalent to $6 x$
M1A0

Student response 2
(no working shown)
$6 x$ seen on answer line M1A0
Answer $6 x$

Student response 3
$3 x=38.4$
$6 x$ not seen
MOAO
Answer (blank)

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## Dependent method marks (M1dep)

A dependent method mark can only be awarded if previous method mark(s) have been awarded. However, if an examiner is awarding a method mark for a correct calculation (or expression etc), sight of the correct calculation (or expression etc) stated in the M1dep part of the mark scheme would automatically imply the first mark.

When awarding dependent method marks, examiners will always follow through from correct working shown for the previous method mark(s).

## Example

Mark scheme says: $2 x^{3}$

| $x^{3}=3.375$ | M1dep |  |
| :--- | :--- | :--- |
| 1.5 | A1 | oe |

Student response 1
$2 x^{3}=6.75$

Answer 0.945
$2 x^{3}$ seen for the first M1 but the required equation for the 2nd mark is not seen.
The answer is incorrect (had the answer been correct the 2nd mark would have been implied)

M1MOdepA0

## Student response 2

$x^{3}=3.375$
Answer 1.125

Correct equation seen for M1dep implies the first M1

M1M1depA0

The equation seen is not correct so the first M1 is not implied

MOMOdepAO

## Accuracy marks (B1)

'B' marks are accuracy marks that are awarded independent of method such as for stating a fact or giving a reason.

Example
Mark scheme says:

| centre $(-7,4)$ | B1 |
| :--- | :--- |
| radius 6 | B1 |

## Student response 1

centre $(-7,4) \quad$ radius 36

## Centre correct but radius incorrect

B1B0

Centre incorrect and although a correct method is seen for centre the answer is incorrect

BOB0

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## Accuracy marks (A1)

The 'A' mark refers to the mark given for the student's correct final answer. This means that if a student has made a slip in their working, although they can potentially score all method marks, they cannot score the A mark. Obtaining the correct final answer without working will score full marks unless the scheme states otherwise.

## Example

Mark scheme says: $2(8 d-3)$ or $5(3 d-7)$ M1 oe
$16 d-6=15 d-35 \quad$ M1dep oe equation with brackets expanded
-29 A1

Student response 1
$2(8 d-3)=5(3 d-7)$
$16 d-15 d=-35+6$

Answer - 41
M1 followed by M1dep for an equivalent equation with brackets expanded
Answer is incorrect
M1M1depA0

## Student response 2

$16 d-5=15 d-35$

Answer-30
$15 d-35$ is equivalent to $5(3 d-7)$ so the first M1 is awarded. The equation is incorrect so MOdep
Although the answer follows through from their equation the A1 mark is not A1ft (see next section)

M1M0depA0

## Student response 3

(no working)
Answer - 29

The answer is correct so scores full marks with the M marks being implied (had the question been a Show that or a Prove that or included the instruction You must show your working only writing an answer would have not scored any marks) M1M1depA1

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## Follow-through marks (A1ft)

If the mark scheme states A1ft the student could obtain the final mark in the scheme even if all the previous marks have not been awarded. There will be an instruction in the mark scheme telling examiners which previous marks the student needs to have been awarded to be eligible for the A1ft. Note that students cannot score full marks if the A1 has been awarded using the ft unless the question is split into parts (a) and (b), where students who do not score full marks in (a) could potentially score full marks in (b).

## Example

Mark scheme says: $\left(\begin{array}{cc}12 & 6 \\ 3 & 0\end{array}\right)$
At least two values correct

| in evaluation of | M 1 |
| :--- | :--- |
| their $\left(\begin{array}{cc}12 & 6 \\ 3 & 0\end{array}\right) \times\left(\begin{array}{cc}2 & 0 \\ -1 & 5\end{array}\right)$  <br> $\left(\begin{array}{cc}18 & 30 \\ 6 & 0\end{array}\right)$ A1ft ft B0M1 |  |

Student response 1

$$
\left(\begin{array}{cc}
12 & 6 \\
3 & 0
\end{array}\right) \times\left(\begin{array}{cc}
2 & 0 \\
-1 & 5
\end{array}\right)=\left(\begin{array}{cc}
18 & 30 \\
5 & 8
\end{array}\right)
$$

Answer $\left(\begin{array}{cc}18 & 30 \\ 5 & 8\end{array}\right)$
B1 for $\left(\begin{array}{cc}12 & 6 \\ 3 & 0\end{array}\right)$
At least two values are correct in the evaluation for M1
Answer is incorrect (ft would not be considered anyway as B1M1 has been scored)

B1M1A0

Student response 2
$\left(\begin{array}{cc}12 & 0 \\ 6 & 2\end{array}\right) \times\left(\begin{array}{cc}2 & 0 \\ -1 & 5\end{array}\right)=\left(\begin{array}{cc}24 & 0 \\ 10 & 10\end{array}\right)$

Answer $\left(\begin{array}{cc}24 & 0 \\ 10 & 10\end{array}\right)$
$B 0$ for $\left(\begin{array}{cc}12 & 0 \\ 6 & 2\end{array}\right)$
and this matrix is now their $\left(\begin{array}{cc}12 & 6 \\ 3 & 0\end{array}\right)$
At least two values are correct in the evaluation for M1 so the A1ft condition of BOM1 is met. The A1ft is awarded as all four values are correct on ft

B0M1A1ft

## Student response 3

$$
\begin{aligned}
& \left(\begin{array}{cc}
12 & 3 \\
0 & 6
\end{array}\right) \times\left(\begin{array}{cc}
2 & 0 \\
-1 & 5
\end{array}\right)=\left(\begin{array}{cc}
21 & 15 \\
-6 & 5
\end{array}\right) \\
& \text { Answer }\left(\begin{array}{cc}
21 & 15 \\
-6 & 5
\end{array}\right)
\end{aligned}
$$

B0 for $\left(\begin{array}{cc}12 & 3 \\ 0 & 6\end{array}\right)$
and this matrix is now their $\left(\begin{array}{cc}12 & 6 \\ 3 & 0\end{array}\right)$
At least two values are correct in the evaluation for M 1 so the A 1 ft condition of B0M1 is met. However the A1ft is not awarded as all four values are not correct on ft

B0M1A0ft

## Special case marks (SC1)

Special case marks (SC1, SC2) are in the scheme for incorrect final answers that imply the student followed a partially correct method. They can only be awarded when they are included in the scheme (they will be on the right-hand side of the final mark). Students either receive the special case mark(s) or method marks, whichever is greater. Examiners do not need to see any working to award special case marks.

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Example
Mark scheme says: }6\times5\times4\mathrm{ or 120 M1
    4\times3\times2 or 24 M1
    144 A1 SC2 2880
    SC1 }144
```


## Student response 1

120

Answer 2880
120 scores the first M1
The answer 2880 scores SC2
Award the greater number of marks.

SC2

## Student response 2

$6 \times 5 \times 4+4 \times 3 \times 2$

Answer 1440
Working scores M1M1
The answer scores SC1 Award the greater number of marks.

M1M1A0

## Student response 3

$6 \times 5=30 \quad 4 \times 3=12$

Answer 1440
Working scores zero
The answer scores SC1 Award the greater number of marks.

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## Misreads / Miscopy

Students often miscopy values from the question or from their calculator. Where an examiner believes a miscopy is genuine, all method marks can be awarded unless the mark scheme states otherwise. The only marks the student cannot score are A or B marks.

## Example

Mark scheme says: $25 \times 2 \div 4$ or 12.5

$$
\begin{array}{ll}
\text { their } 12.5 \times \frac{3}{5} \text { or } 7.5 & \text { M1dep oe } \\
\tan x=\frac{4}{\text { their } 7.5} & \text { M1 oe }
\end{array}
$$

[27.9, 28.4]
A1

## Student response 1

$25 \times 2 \div 4=12.5$
$15.2 \times \frac{3}{5}=25.33$
$\tan x=\frac{4}{25.33}$
First M1 scored then there is a misread of 12.5 as 15.2
The correct method is seen for the next two method marks and the misread has not made the question any easier. The answer is incorrect and there are no ft A marks after a misread.

M1M1depM1A0
Answer $8.97^{\circ}$

## Student response 2

$25 \times 2=50$
$50 \times \frac{3}{5}=30$
$\tan x=\frac{4}{25}$
Answer $7.6^{\circ}$

The method is incorrect so the first M1 is not awarded.
The second mark is dependent so cannot be awarded.
Although the third mark is not dependent, using 25 instead of 30 is not a misread.

MOMOdepMOAO

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## Simplification or conversion of a correct answer

In some questions once a correct answer has been seen, examiners can ignore incorrect attempts at simplifying. When this is applicable it will be stated in the Additional Guidance part of the mark scheme

## Example

Mark scheme says: $\frac{7}{60}$ or $[0.116,0.117] \quad$ B1 oe
Additional Guidance says Ignore conversion or simplification attempt after correct answer seen

## Student response 1

$\frac{7}{60}$

Answer 0.12
$\frac{7}{60}$ seen
The conversion to a decimal can be ignored even though it is outside the range [0.116, 0.117]

Student response 2
$\frac{28}{240}=\frac{7}{50}$
Answer $\frac{7}{50}$
$\frac{28}{240}$ is equivalent to $\frac{7}{60}$ The
simplification attempt can be ignored
B1

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## Choice

If students use two opposing methods, mark the one leading to the answer on the answer line, ignoring all other methods. If no answer is provided, mark both methods and award the lower number of marks.

## Example

Mark scheme says: $7.2^{2}$ or $9.6^{2}$
$\sqrt{7.2^{2}+9.6^{2}}$
12

M1 oe
M1dep oe
A1

## Student response 1

$7.2^{2}+9.6^{2}=144 \quad \sqrt{144}=12$
$\sqrt{9.6^{2}-7.2^{2}}=6.34$
Answer 6.34

Two methods seen. Mark the method leading to the answer on the answer line.
Scores M1 only.
M1M0depA0

## Student response 2

$\sqrt{9.6^{2}-7.2^{2}}=6.34$
$\sqrt{9.6^{2}+7.2^{2}}$
Answer (blank)
Two methods seen.
No answer on the answer line.
Mark both methods and award the lower number of marks.
First method scores M1 only.
Second method scores M1M1dep M1M0depA0

## Student response 3

$\sqrt{9.6^{2}-7.2^{2}}$
$\sqrt{9.6^{2}+7.2^{2}}$
Answer 12
Two methods seen. Mark the method leading to the answer on the answer line.
This method is fully correct as is the answer.

M1M1depA1

## When to ignore the rules of choice

If the Additional Guidance section of a mark scheme states, for example, Up to M2 may be awarded for correct work with no, or incorrect, answer, even if this is seen amongst multiple attempts, this overrides the usual rules of choice.

## Example

Mark scheme says: $2 \sin x\left(1-\sin ^{2} x\right) \quad$ M1

$$
\begin{array}{ll}
5 \frac{\sin x}{\cos x} \times \cos x & \text { M1 } \\
7 \sin x & \text { A1 }
\end{array}
$$

Additional Guidance says Up to M2 may be awarded for correct work with no, or incorrect, answer, even if this is seen amongst multiple attempts.

## Student response 1

$2 \sin x\left(1-\sin ^{2} x\right) \quad$ Both $M$ marks are seen. There is
$2 \sin x\left(1-\cos ^{2} x\right)$
$5 \frac{\sin x}{\cos x} \times \cos x \quad 5 \tan x$ other work but this can be ignored due to the Additional Guidance instruction. Note that had the answer been correct, full marks would have been awarded

M1M1A0
Answer $2 \sin x-2 \sin x \cos ^{2} x$

## Student response 2

$2 \sin ^{3} x+\cos ^{2} x=2+\cos x$
Second M mark is seen. There is
$2 \sin x\left(2 \sin ^{2} x-\cos ^{2} x\right)$
$5 \tan x \cos x=5 \frac{\sin x}{\cos x} \times \cos x$ other work but this can be ignored due to the Additional Guidance instruction.

M0M1A0

Answer (blank)

## Work crossed out

If a student has crossed out their entire response with no work replacing it, mark the crossed out work. If a student crosses out part of their response, only mark the part that is not crossed out.

## Example

Mark scheme says: 42 B3
B2 18 and 24
B1 18 or 24 or 12

## Student response 1



Answer (blank)



Entire response has been crossed out.
Mark the crossed out work. 18 and 24 seen

## Student response 2


$72 \div 2=36$
Answer (blank)

Part of the response has been crossed out.
Mark the work that is not crossed out.
$72 \div 2$ does not score

Part of the response has been crossed out.
Mark the work that is not crossed out The answer of 54 does not score. Had the answer been 42 full marks would be awarded.
Had the answer been 18 and 24 B2 would be awarded.
Had the answer been 18 or 24 or 12
B1 would be awarded

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## Poor handwriting or spelling

Apply a common-sense approach to poor handwriting or spelling. Examiners are on the student's side. If their working is correct but, for example, 168.4 looks like 108.4, give them the benefit of doubt and award the marks. Check through the rest of their script for other ambiguous 6 s , for example, to help confirm what they have written.

## If you want to learn more

We have an on-demand e-learning 'Mark scheme guidance and application' course for GCSE Mathematics available to access on our website.

If you'd be interested in information on joining our team of examiners then please check our website to see if there are any vacancies or to express your interest.

