

Notes and guidance: Marking guidance

Level 2 Certificate in Further Mathematics (8365)

Version 1.0 June 2024

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.

М	Method marks are awarded for a correct method which could lead to a correct answer.
Α	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
В	Marks awarded independent of method.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded for a common misinterpretation which has some mathematical worth.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent 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 <i>x</i>	M1	oe	
	3.2	A1	oe	
Student response	1			
$6 \times x = 38.4$				$6 \times x$ seen in working which is equivalent to $6x$
Answer $x = 6.4$			M1A0	
Student response	2			
(no working shown)				6 <i>x</i> seen on answer line
Answer 6 <i>x</i>				M1A0
e	-			
Student response	3			
3 <i>x</i> = 38.4				6 <i>x</i> not seen M0A0

© 2024 AQA

Answer (blank)

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 <i>x</i> ³	M1	oe		
	$x^3 = 3.375$	M1dep			
	1.5	A1	oe		
Student response $2x^3 = 6.75$ Answer 0.945	1			$2x^3$ seen for the first M required equation for t mark is not seen. The answer is incorrect answer been correct th would have been implie	1 but the he 2nd t (had the te 2nd mark ed) M1M0depA0
Student response $x^3 = 3.375$	2			Correct equation seen	for M1dep
Answer 1.125				implies the first M1	M1M1depA0
Student response	3				
$x^2 = 3.375$				The equation seen is n the first M1 is not impl	iot correct so lied M0M0depA0

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) ra	radius 36	Centre correct but radius incorrect
		B1B0
Student respo	nse 2	

centre = (7, -4)radius 4 + 2 = 8Centre incorrect and although
a correct method is seen for
centre the answer is incorrect

B0B0

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 <i>d</i> -3) or 5(3 <i>d</i> -7) 16 <i>d</i> -6=15 <i>d</i> -35 -29	M1 M1dep A1	oe oe equation with brackets expanded
Student response	1		
2(8d - 3) = 5(3d - 7)			M1 followed by M1dep for an equivalent equation with
16d - 15d = -35 + 6			brackets expanded Answer is incorrect
Answer –41			M1M1depA0
Student response	2		

16d - 5 = 15d - 35	15d - 35 is equivalent to $5(3d - 7)so the first M1 is awarded.The equation is incorrect so$
Answer –30	M0dep Although the answer follows through from their equation the A1 mark is not A1ft (see next section) M1M0depA0
Student response 3	
(no working)	The answer is correct so scores full marks with the M marks
Answer –29	being implied (had the question been a <i>Show that</i> or a <i>Prove that</i> or included the instruction <i>You</i> must show your working only

not scored any marks) M1M1depA1

writing an answer would have

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: $\begin{pmatrix} 12 & 6 \\ 3 & 0 \end{pmatrix}$ B1 At least two values correct in evaluation of M1 their $\begin{pmatrix} 12 & 6 \\ 3 & 0 \end{pmatrix} \times \begin{pmatrix} 2 & 0 \\ -1 & 5 \end{pmatrix}$ $\begin{pmatrix} 18 & 30 \\ 6 & 0 \end{pmatrix}$ A1ft

Student response 1

$$\begin{pmatrix} 12 & 6 \\ 3 & 0 \end{pmatrix} \times \begin{pmatrix} 2 & 0 \\ -1 & 5 \end{pmatrix} = \begin{pmatrix} 18 & 30 \\ 5 & 8 \end{pmatrix}$$

Answer
$$\begin{pmatrix} 18 & 30 \\ 5 & 8 \end{pmatrix}$$

At least two values are correct in the evaluation for M1

B1 for $\begin{pmatrix} 12 & 6 \\ 3 & 0 \end{pmatrix}$

ft B0M1

Answer is incorrect (ft would not be considered anyway as B1M1 has been scored)

B1M1A0

B0 for
$$\begin{pmatrix} 12 & 0 \\ 6 & 2 \end{pmatrix}$$

and this matrix is now their $\begin{pmatrix} 12 & 6 \\ 3 & 0 \end{pmatrix}$

At least two values are correct in the evaluation for M1 so the A1ft condition of B0M1 is met. The A1ft is awarded as all four values are correct on ft

B0M1A1ft

Student response 2

$$\begin{pmatrix} 12 & 0 \\ 6 & 2 \end{pmatrix} \times \begin{pmatrix} 2 & 0 \\ -1 & 5 \end{pmatrix} = \begin{pmatrix} 24 & 0 \\ 10 & 10 \end{pmatrix}$$

Answer
$$\begin{pmatrix} 24 & 0 \\ 10 & 10 \end{pmatrix}$$

Student response 3

$$\begin{pmatrix} 12 & 3 \\ 0 & 6 \end{pmatrix} \times \begin{pmatrix} 2 & 0 \\ -1 & 5 \end{pmatrix} = \begin{pmatrix} 21 & 15 \\ -6 & 5 \end{pmatrix}$$

Answer $\begin{pmatrix} 21 & 15 \\ -6 & 5 \end{pmatrix}$

B0 for $\begin{pmatrix} 12 & 3 \\ 0 & 6 \end{pmatrix}$ and this matrix is now their $\begin{pmatrix} 12 & 6 \\ 3 & 0 \end{pmatrix}$ At least two values are correct in the evaluation for M1 so the A1ft 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.

Example				
Mark scheme says:	$6 \times 5 \times 4$ or 120	M1		
	$4 \times 3 \times 2$ or 24	M1		
	144	A1	SC2 28	80
			SC1 14	40
Student response	1			
				120 scores the first M1
120				The answer 2880 scores SC2
Angwar 2000				Award the greater number of
Allswei 2000				marks.
				502
Student response	2			
				Working scores M1M1
0 × 5 × 4 + 4 × 3 × 2				the greater number of marks.
Answer 1440				M1M1A0
Charlenterer	2			
Student response	3			Working scores zero
6 × 5 = 30 4 × 3 =	12			The answer scores SC1 Award the
				greater number of marks.
Answer 1440				SC1

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 × 2 ÷ 4 or 12.5	M1 oe	
	their 12.5 × $\frac{3}{5}$ or 7.5	M1dep oe	
	$\tan x = \frac{4}{\text{their 7.5}}$	M1 oe	
	[27.9, 28.4]	A1	

Student response 1

25 × 2 ÷ 4 = 12.5	First M1 scored then there is a misread of 12.5 as 15.2
$15.2 \times 3 = 25.33$	The correct method is seen for the next two method marks and the misread has
5	not made the question any easier. The answer is incorrect and there are
$\tan x = \frac{4}{25.33}$	no ft A marks after a misread. M1M1depM1A0
Answer 8.97°	

Student response 2

$25 \times 2 = 50$	The method is incorrect so the first M1 is
3	not awarded.
$50 \times \frac{3}{5} = 30$	The second mark is dependent so cannot
5	be awarded.
$\tan x = \frac{4}{2\pi}$	Although the third mark is not
25	dependent, using 25 instead of 30 is not a
Approx 7.6°	misread.
Allswei 7.0	M0M0depM0A0

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] B1 oe

Additional Guidance says Ignore conversion or simplification attempt after correct answer seen

Student response 1

	7
7	
60	The conversion to a decimal can be
	ignored even though it is outside the
Answer 0.12	range [0.116, 0.117]
	B1

Student response 2

$\frac{8}{40} = \frac{7}{50}$	$\frac{28}{240}$ is equivaler
nswer $\frac{7}{50}$	simplification att

nt to $\frac{7}{60}$ The empt can be ignored B1

2 24

Ar

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	M1	oe
	$\sqrt{7.2^2 + 9.6^2}$	M1dep	oe
	12	A1	

Student response 1

$7.2^2 + 9.6^2 = 144$	$\sqrt{144} = 12$	Two methods seen. Mark the
$\sqrt{9.6^2 - 7.2^2} = 6.34$		method leading to the answer on the answer line.
		Scores M1 only.
Answer 6.34		M1M0depA0

Student response 2

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

Student response 3

$\sqrt{9.6^2 - 7.2^2}$	Two methods seen. Mark the
	method leading to the answer on
$\sqrt{9.6^2 + 7.2^2}$	the answer line.
	This method is fully correct as is
Answer 12	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 (1 – sin ² x)	M1
	$5 \frac{\sin x}{\cos x} \times \cos x$	M1
	7 sin <i>x</i>	A1

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

$2 \sin x (1 - \sin^2 x)$	Both M marks are seen. There is
	other work but this can be
$2 \sin x (1 - \cos^2 x)$	ignored due to the Additional
	Guidance instruction. Note that
$5 \frac{\sin x}{2} \times \cos x$ 5 tan x	had the answer been correct, full
COS x	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
$2\sin x (2\sin^2 x - \cos^2 x)$	other work but this can be ignored due to the Additional
5 tan x cos x = 5 $\frac{\sin x}{x}$ × cos x	Guidance instruction. M0M1A0
COS x	

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

42×2424

Answer (blank)

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

B2

Student response 2

72 ÷ 2 = 36

Answer (blank)

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

B0

Student response 3

Answer 54

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

B0

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 6s, for example, to help confirm what they have written.

If you want to learn more

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

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