



GCSE MATHEMATICS 8300/2F

Foundation Tier Paper 2 Calculator
Middle Third

Mark scheme
November 2024

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

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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.

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	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	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.
oe	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
[a, b]	Accept values between a and b inclusive.
[a, b)	Accept values $a \leq \text{value} < b$
3.14 ...	Accept answers which begin 3.14 eg 3.14, 3.142, 3.1416
Use of brackets	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	HSO HSM HOM SOM	B2	with no errors may be given as words any order B1 for any one correct option stated
	Additional Guidance		
	Ignore repeated answers eg HSM and SHM		
	Repeated toppings is an error eg HHS		
	2 or 4 toppings is an error eg SM or HSOM		

Q	Answer	Mark	Comments
10(a)	37.5 or $37\frac{1}{2}$	B1	accept $\frac{75}{2}$
	Additional Guidance		
	37		B0
	37.5 followed by 37 or 38 on the answer line		B0
	38		B0
	37.50		B1

Q	Answer	Mark	Comments
10(b)	0.47	B2	B1 0.46 or 0.469 or 0.4688 or 0.46875 or 0.47 with one or more trailing 0s B1 their 3dp or more value correctly rounded to 2dp

Q	Answer	Mark	Comments
11	True May be true True	B3	B1 for each correct box
	Additional Guidance		
	More than one box ticked in a row is choice for that row		
	A tick and a cross (or two crosses) in a row, mark the tick		
	Any unambiguous indication eg Cross in all 3 correct boxes with all other boxes blank		B3

Q	Answer	Mark	Comments
12(a)	$(-4)^2 + 7 \times -4$ or $-4(-4 + 7)$ or 16 or -28	M1	oe eg $(-4)^2 + 7(-4)$
	-12	A1	SC1 -44
	Additional Guidance		
	SC is for $-4^2 + 7 \times -4 = -16 - 28 = -44$		
	Embedded 16 or -28 seen eg $16 + 7x$ without correct answer		M1A0
	Values may be implied eg1 $(-4)^2 + 7 \times 4 = 44$ 16 is implied eg2 only answer 44		M1A0 M0A0
	Further correct work eg $16 - 28 = -12$, Answer $3x$		M1A1
	Further incorrect work eg $16 - 28 = -12$, Answer $-12x$		M1A0
	$+ -28$ is the same as -28		M1
	Only $-4^2 + 7 \times -4$		M0A0
	$-4^2 + 7 \times -4 = -16 + 28 = 12$		M0A0
	$16x$ does not imply 16		M0A0

Q	Answer	Mark	Comments
12(b)	$y + 1$ or $1 + y$	B1	

Q	Answer	Mark	Comments
12(c)	$4a + 8$ or $8 + 4a$ or $5a$	M1	
	$5a + 8$ or $8 + 5a$	A1	
	Additional Guidance		
	Further incorrect work or simplification eg $5a + 8$, Answer $13a$		M1A0

Q	Answer	Mark	Comments
13	1 hour 58 minutes 32 seconds	B2	B1 2 of the 3 values correct or correct time not in the form requested
	Additional Guidance		
	1 hour 58 minutes 72 seconds		B1
	1 hour 59 minutes 32 seconds		B1
	(blank or 0) hour 118 minutes 32 seconds		B1
	(blank or 0) hour (blank or 0) minutes 7112 seconds		B1
	1 hour 118 minutes 7112 seconds		B0
	1 hour 98 minutes 72 seconds		B0

Q	Answer	Mark	Comments
14	Alternative method 1		
	$360 - 90 - 78 - 48$ or 144	M1	oe may be seen on the diagram
	$120 \times 360 \div 90$ or 480	M1	oe eg 120×4
	$\frac{\text{their } 144}{360} \times \text{their } 480$	M1dep	oe dep on M2
	192	A1	
	Alternative method 2		
	$360 - 90 - 78 - 48$ or 144	M1	oe may be seen on the diagram
	$120 \div 90$ or $\frac{4}{3}$ or $90 \div 120$ or $\frac{3}{4}$	M1	oe
	their 144 $\times \frac{120}{90}$	M1dep	oe eg their $144 \div \frac{90}{120}$ or 16×12 dep on M2
	192	A1	

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14 cont	Alternative method 3		
	$360 - 90 - 78 - 48$ or 144	M1	oe may be seen on the diagram
	their $144 \div 90$ or $\frac{8}{5}$ or $90 \div$ their 144 or $\frac{5}{8}$	M1dep	oe
	$120 \times \frac{144}{90}$	M1dep	oe eg $120 \div \frac{90}{144}$
	192	A1	
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Allow $\times 1.3(3\dots)$ if seen for method for four thirds		

Q	Answer	Mark	Comments
15(a)	$240 \div 10$ or $120 \div 5$ or 24 or 240×6 or 120×12 or 1440	M1	
	24 litres per minute or 1440 litres per hour	A1	oe eg 24l/min or 0.4 litres per second
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Units may be abbreviated but must be the correct units for their correct rate eg allow 0.4 l/s or 0.4 lps for 0.4 litres per second		M1A1
	Do not ignore further incorrect attempts to change units eg 24 litres per minute and 0.4 litres/hour on the answer line		M1A0

Q	Answer	Mark	Comments
15(b)	Horizontal line from (10, 240) to (30, 240)	B1	$\pm \frac{1}{2}$ small square
	Straight line from their (30, 240) to (12 + their 30, 0)	B1ft	$\pm \frac{1}{2}$ small square for (12 + their 30, 0)
	Additional Guidance		
	Mark intention		
	No horizontal line and straight line from (10, 240) to (22, 0)		B0B1ft

Q	Answer	Mark	Comments
16	4 squares shaded so that the grid has exactly two lines of symmetry	B2	B1 4 squares shaded so that the grid has four lines of symmetry or even number of squares shaded so that the grid has exactly two lines of symmetry
	Additional Guidance		
	or or </		

Q	Answer	Mark	Comments
17	Alternative method 1		
	$7 \times 4000 \div 100$ or 280	M2	oe M1 7×4000 or 28000 or $7 \div 100$ or 0.07 or $4000 \div 100$ or 40
	280 and No	A1	oe eg 20 less and No
	Alternative method 2		
	$300 \times 100 \div 4000$ or 7.5	M2	oe M1 300×100 or 30000 or $300 \div 4000$ or 0.075 or $100 \div 4000$ or 0.025
	7.5 and No	A1	
	Alternative method 3		
	$300 \times 100 \div 7$ or 4285(.7...) or 4286	M2	oe M1 300×100 or 30000 or $300 \div 7$ or [42.8, 42.9] or $100 \div 7$ or [14.2, 14.3]
	[4200, 4300] and No with M2 seen	A1	

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17 cont	Alternative method 4		
	7×4000 or 28000	M1	oe
	300×100 or 30000	M1	oe
	28000 and 30000 and No	A1	
	Alternative method 5		
	$300 \div 4000$ or 0.075	M1	oe
	$7 \div 100$ or 0.07	M1	oe
	0.075 and 0.07 and No	A1	
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	No may be indicated by selecting the box or a statement in the working lines		
	No cannot be implied only by an inequality		
	A correct value is sufficient to show working eg 280 and No (except in alt 3)	M2A1	
	20 less in alt 1 implies M2		