



GCSE MATHEMATICS 8300/3F

Foundation Tier Paper 3 Calculator
Final 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

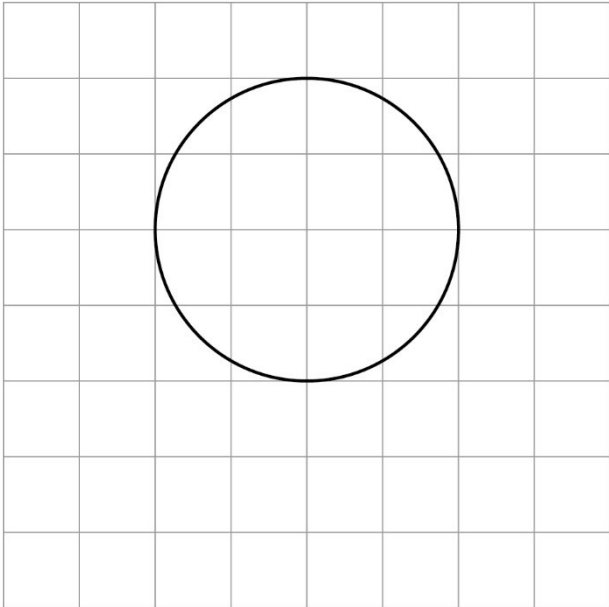
Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

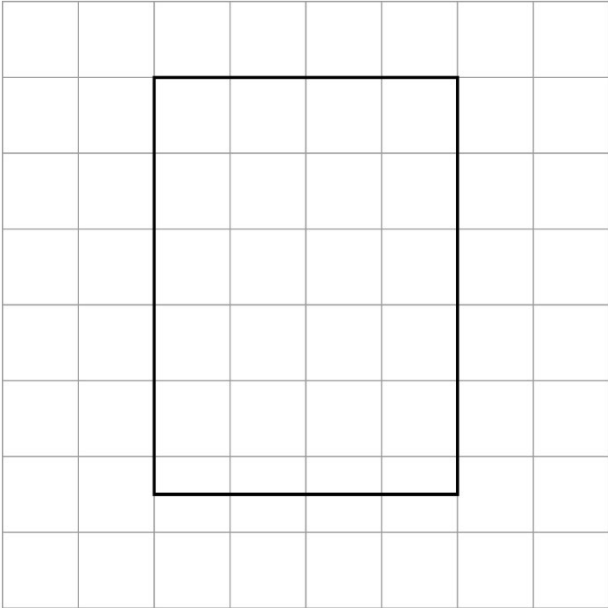
Continental notation

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
19(a)	Plots at least 2 points correctly	M1	$\pm \frac{1}{2}$ square
	Fully correct with all points joined by single straight lines	A1	$\pm \frac{1}{2}$ square
	Additional Guidance		
	Mark intention		
	Ignore other points plotted and any lines of best fit		
	Points may be implied by the position of the line		
			M1A1

Q	Answer	Mark	Comments
19(b)	[360, 500]	B1	
	Additional Guidance		
	An interval given entirely in range eg 425 – 440		B1
	An interval given not entirely in range eg 340 – 430		B0

Q	Answer	Mark	Comments
20(a)	Circle with diameter 4 cm	B2	diameter ± 5 mm B1 for any circle or $40 \div 10$ or 4 or (radius =) 2
	Additional Guidance		
			B2
	Can be anywhere on the grid		
	Mark intention		
	Check stem and part (b) for evidence of 4 or 2		
	4 or 2 cannot be implied from a diagram for B1		

Q	Answer	Mark	Comments
20(b)	Rectangle with horizontal sides 4 cm and vertical sides 5.5 cm	B2	± 2 mm B1 for any rectangle or $40 \div 10$ or 4 and $55 \div 10$ or 5.5 SC2 for correct answers in (a) and (b) reversed (award 0 in (a) and 2 in (b))
	Additional Guidance		
			B2
	Can be anywhere on the grid		
	Mark intention		
	Do not accept curved corners on any rectangle		
	Check stem and part (a) for evidence of 4 and 5.5		
	4 and 5.5 cannot be implied from a diagram for B1		

Q	Answer	Mark	Comments
21	5×8 or 40	M1	oe
	their $40 \div 10$ or 4	M1dep	oe
	$8 + 8 + 5 + 5$ or 26 and $10 + 10 + 4 + 4$ or 28 or $8 + 5$ or 13 and $10 + 4$ or 14	M1dep	oe
	26 : 28	A1	oe ratio eg 13 : 14
	Additional Guidance		
	Ignore attempts at simplification after correct answer seen		
	Ignore units		
	Check diagram for working		

Q	Answer	Mark	Comments
22	Alternative method 1: Compares lower bound with cost of 6 drinks		
	$12 - 0.5(0)$ or $11.5(0)$	M1	oe eg $1200 - 50$ allow mixed units eg $12 - 50$
	1.89×6 or 11.34	M1	oe eg 189×6
	$11.5(0)$ and 11.34	A1	oe eg 1150 and 1134 units must be consistent
	Alternative method 2: Compares rounded cost of drinks with 12		
	1.89×6 or 11.34	M1	oe eg 189×6
	11.34 rounds to 11	M1dep	oe eg $11.34 \rightarrow 11$
	11.34 rounds to 11 and 11 is less than 12	A1	oe units must be consistent
	Alternative method 3: Uses lower bound to work out cost or number of drinks		
	$12 - 0.5(0)$ or $11.5(0)$	M1	oe eg $1200 - 50$ allow mixed units eg $12 - 50$
	their $11.5(0) \div 6$ or $[1.91, 1.92]$ or their $11.5(0) \div 1.89$ or $[6.08, 6.1]$	M1	oe eg $1150 \div 6$ or $[191, 192]$ their $11.5(0)$ must be $[11, 11.99]$
	$11.5(0) \div 6$ and $[1.91, 1.92]$ or $11.5(0) \div 1.89$ and $[6.08, 6.1]$	A1	oe eg $1150 \div 6$ and $[191, 192]$ units must be consistent
	Additional Guidance		
	Ignore any use of upper bound		
	Condone inconsistent notation eg 11.50 and £11.34p		M1M1A1
	11.34 rounds to 11 not 12 so she will have enough		M1M1A1
	11.34 rounds to 11 so she will have enough		M1M1A0

Q	Answer	Mark	Comments
23	$2m + 4$ or $2 \times m + 4$	B2	oe B1 $2m$ or m^2 or $200m + 400$ or $km + 4$ with k an integer, $k \neq 0$ or 2
	Additional Guidance		
	Ignore any attempt to substitute a value for m after $2m$ seen for B1		
	Condone $m^2 + 4$ (not testing simplification)		B2
	Accept use of another letter for m other than c eg1 $2x + 4$ eg2 $2c + 4$		B2 B0
	Condone inclusion of £ sign for B1 eg1 $£2m + 4$ eg2 $£2m$		B1 B1

Q	Answer	Mark	Comments
24(a)	$912 \div 15.2$ or 60	M1	oe implied by 62
	$912 \div (\text{their } 60 + 2)$ or $912 \div 62$ or $[14.7, 14.71]$	M1dep	oe
	$[14.7, 14.71] : 1$ or $15 : 1$ with M2 awarded	A1	oe eg $\frac{456}{31} : 1$
	Additional Guidance		
	M1 may be awarded for correct work, with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Do not allow misreads for 15.2		

Q	Answer	Mark	Comments
24(b)	Valid explanation	B1	eg she needs to round up
	Additional Guidance		
	She rounded down		B1
	Needs 8 (teachers)		B1
	Need (one) more		B1
	Only 70 students could go		B1
	2 students do not have a teacher		B1
	There are students without a teacher		B1
	Have groups of 8 with 9 teachers		B0
	8		B0
	Cannot have 0.2 of a teacher		B0

Q	Answer	Mark	Comments
25	$(-2, -2)$ and $(-2, 4)$ and $(4, 4)$	B4	B3 for 2 correct coordinates or the 3 correct lines drawn B2 for 1 correct coordinate or 2 correct lines drawn B1 for 1 correct line drawn
	Additional Guidance		
	Mark coordinates first		
	Ignore incorrect lines		

Q	Answer	Mark	Comments
26	Any two of the following statements - not using π in the calculation - not cubing 7.5 - no units	B2	oe B1 for one correct statement
	Additional Guidance		
	Ignore irrelevant statements for B1 or B2		
	Ignore incorrect statements or incorrect values with correct reasons, unless contradictory, for B1		
	Need to do $\pi \times 7.5^3$ (calculation shows 2 mistakes)	B2	
	The answer should be 281.25π (doesn't show mistakes but a correct answer in terms of π)	B1	
	Need to do $\pi \times 7.5^3$ to get 883.6 (883.6 is not an answer in terms of π)	B1	
	The answer should be [883.5, 884]	B0	
	15 is wrong	B0	
	Statements about not using π in the calculation She hasn't multiplied by π / pi Used 3 for π Hasn't used 3.14 The answer is not in terms of π It is not in terms of π	B1 B1 B0 B0 B0	
	Statements about not cubing 7.5 She should have done 7.5^3 She hasn't cubed the radius She multiplied it by 3 Hasn't cubed a number	B1 B1 B1 B0	
	Statements about no units She hasn't given any units She should have written cm^3	B1 B1	