AQA

GCSE
MATHEMATICS
8300/1F

Foundation Tier Paper 1 Non-Calculator

Mark scheme

Shadow paper based on November 2024

Version: 1.0 Final

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

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 $\leqslant$ 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
1(a)	9	B1	condone ±9
	Additional Guidance		
	−9 only		B0

Q	Answer	Mark	Comments
1(b)	125	B1	

Q	Answer	Mark	Comments
1(c)	10^3	B1	
	Additional Guidance		
	1×10^3		B0
	Answer 3		B0

Q	Answer	Mark	Comments
2	16×4	M1	oe
	64	A1	accept 4 : 64 or 64 : 4

Q	Answer	Mark	Comments
3(a)	$2\dfrac{1}{2}$	B1	oe mixed number
	Additional Guidance		
	$2.5 = 2\dfrac{1}{2}$		B1
	$2\dfrac{1}{2} = 2.5$		B0

Q	Answer	Mark	Comments
3(b)	$\dfrac{2}{3}$	B1	oe

Additional Guidance

Ignore attempt to simplify or convert if correct fraction seen	

Q	Answer	Mark	Comments
4(a)	1, 2, 3, 4, 6, 12	B2	any order B1 5 or 6 correct values with up to 2 incorrect values or 4 correct values with 0 or 1 incorrect values or 3 correct values with 0 incorrect values

Additional Guidance

Allow values given in pairs eg 1 × 12, 2 × 6, 3 × 4 6 factors eg (2, 6), (3, 4)	B2 B1
Repeated values score max B1 eg 1, 2, 3, 4, 6, 6, 12 eg 1, 2, 2, 3	B1 B1
If a prime factor tree or similar is used then the factors must be identified	

Q	Answer	Mark	Comments
4(b)	One correctly evaluated counterexample	B1	eg 6 + 9 = 15 or 1 × 3 + 6 × 3 = 21 condone 0 as a multiple of 3

Additional Guidance

One correctly evaluated counterexample seen amongst other trials	B1

Q	Answer	Mark	Comments
5	$\frac{3}{5}$ 70% 0.8 with no incorrect working seen	B2	oe B1 at least one correct conversion comparable with another value SC1 reverse order with no incorrect working seen

Additional Guidance	
Condone missing percentage signs, eg allow 80 for 80%	
Correct answer with no working shown	B2
Accept equivalent forms to the given numbers on the answer line eg 60% 70 80% eg 60 70 80 eg $\frac{3}{5}$ 70% $\frac{8}{10}$ eg 8% 60% 70%	B2 B2 B2 B1
For B1, to be comparable, fractions must have the same denominator or numerator eg $\frac{6}{10}$ $\frac{8}{10}$ eg $\frac{3}{5}$ $\frac{8}{10}$ with no further correct work	B1 B0

Q	Answer	Mark	Comments
6	2×5.5 or 11	M1	oe
	$33.5 -$ their 11 or 22.5	M1dep	oe
	their $22.5 \div 3$ or 7.5	M1dep	oe dep on M2
	7.50 or 750p	A1	SC2 8.50 condone £7.50p

Additional Guidance	
Accept working in pence	
SC2 is for using £5.50 as the cost of a hat or interchanging the quantities	

Q	Answer	Mark	Comments
7(a)	120 children and 60 adults	B1	
	65 left (children) and 55 right (children)	B1	
	20 left (adults)	B1ft	ft 85 − their 65, where their 65 is an integer ⩾ 0 and answer an integer ⩾ 0
	40 right (adults)	B1ft	ft their 60 − their 20, where both integers are ⩾ 0 and answer an integer ⩾ 0
	Additional Guidance		
	Use of relative frequency or probability for an answer is B0 for that answer		
	Ignore working outside the frequency tree		

Q	Answer	Mark	Comments
7(b)	$\dfrac{13}{24}$	B2ft	ft their 65 and/or ft their 120 B1ft $\dfrac{\text{their } 65}{\text{their } 120}$ not fully simplified or correct simplification of their fraction, using numbers from their tree
	Additional Guidance		
	B2ft can only be awarded if their numbers can be simplified, otherwise B1ft		
	Do not ignore further work for B2 after correct answer seen $\dfrac{13}{24} = \dfrac{1}{2}$		B1

Q	Answer	Mark	Comments
	Three from: • Title missing • Horizontal axis label missing • Width of last gap too wide • Height of first bar incorrect	B3	B2 two bullets satisfied B1 one bullet satisfied
	Additional Guidance		
	Ignore irrelevant but non-contradictory statements		
	Check diagram for comments		
	First bullet Title is missing We don't know what the bar chart represents		B1 B1
	Second bullet No label for where students prefer to revise x-axis label missing or No label at the bottom		B1 B1
8	Third bullet Gaps not equal widths or Two gaps are 5 wide and one gap is 7.5 wide Third gap wrong size, it's too wide/thick Third gap wrong or Third gap wrong size Third gap too big / double the width Gaps are different sizes		B1 B1 B0 B0 B0
	Fourth bullet First bar should be (one square) lower/shorter Total should be 131 but chart is 133 First bar is 30 or First bar should be 28 Second bar is 63 but should be 66; Third bar is 33.5 but should be 37 Data for Library is wrong Data for Home / In Class is wrong		B1 B1 B1 B0 B0 B0
	Two marks may be scored in one sentence Library bar too high and third gap too wide No title and no horizontal label No label / Hasn't labelled the chart		B2 B2 B1
	Three valid mistakes with one or more invalid mistakes		B2

Q	Answer	Mark	Comments
9(a)	4 in left column	B1	
	7 in top row	B1	
	All products correct	B2ft	ft their 4 and their 7 B1ft 3 to 10 correctly evaluated products
	Additional Guidance		
	If their 4 is 0, 2 or 6, do not consider those products If their 7 is 0, 2, 3 or 5, do not consider those products		

Q	Answer	Mark	Comments
9(b)	$\dfrac{\text{their number of cube numbers}}{\text{their number of completed cells}}$	B2ft	oe fraction ft their table even if incomplete B1ft their number of cube numbers as a numerator or their number of completed cells as a denominator or cube numbers identified on their grid or in working
	Additional Guidance		
	ft must produce a non-zero probability to score		
	Ignore attempt to simplify or convert if correct fraction seen		

Q	Answer	Mark	Comments
10(a)	$4m + 13$ or $13 + 4m$	B2	B1 $4m$ or $(+)13$
	Additional Guidance		
	Do not ignore further work for B2		
	eg $4m + 13 = 17m$		B1
	eg $4m + 1 = 5m$		B1

Q	Answer	Mark	Comments
10(b)	$2ef$ or $2fe$	B2	B1 2 or ef or fe

	Additional Guidance	
	$Ef2$	B1
	Use of multiplication signs is max B1 eg $2 \times ef$ eg $e \times f$	B1 B0
	$6\frac{1}{3}ef$ $\frac{1}{3}e6f$ $\frac{1}{3}e2f$	B1 B0 B0

Q	Answer	Mark	Comments
	Alternative method 1 – total cost then reduction		
	65 × 6 or 390	M1	oe
	their 390 ÷ 10 or 39	M1dep	oe
	their 390 – their 39 or 351	M1dep	oe dep on M2 65 × 6 × 0.9 implies M3
	3.51 or 351p	A1	condone £3.51p
	Alternative method 2 – reduction then total cost		
	65 ÷ 10 or 6.5	M1	oe
	65 – their 6.5 or 58.5	M1dep	oe 55 × 0.9 implies M2
	their 58.5 × 6 or 351	M1dep	oe dep on M2
	3.51 or 351p	A1	condone £3.51p
11	**Alternative method 3 – buying 10% fewer bags**		
	6 ÷ 10 or 0.6	M1	oe
	6 – their 0.6 or 5.4	M1dep	oe 6 × 0.9 implies M2
	their 5.4 × 65 or 351	M1dep	oe dep on M2
	3.51 or 351p	A1	condone £3.51p
	Additional Guidance		
	Working may be in £ or p or a mixture for up to M3 Ignore units for up to M3		
	Use the Alt that awards the best mark		
	Allow a maximum of one error in each build-up method		

Q	Answer	Mark	Comments
12	4	B1	

Q	Answer	Mark	Comments
13	Never true Sometimes true	B2	B1 one correct

Additional Guidance	
Accept any indication, but if a tick and crosses 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
14(a)	Congruent shape drawn	B1	

Additional Guidance	
Mark intention but whole shape must be on the grid	
Shape can be in any orientation	

Q	Answer	Mark	Comments
14(b)	Correct shape drawn	B2	B1 two or three correct sides or enlargement of the whole shape, with sf < 1 and sf $\neq \frac{1}{2}$

Additional Guidance	
Mark intention but whole shape must be on the grid	
Shape can be in any position or orientation	

Q	Answer	Mark	Comments
	Alternative method 1 – Finding the value of one part first		
	$48 \div (7 + 1)$ or 6	M1	oe
	$7 \times$ their 6 or 42 or $(7 - 1) \times$ their 6	M1dep	oe
	36	A1	
15	**Alternative method 2 – Finding the difference in the number of parts first**		
	$7 - 1$ or 6	M1	oe
	$\frac{\text{their } 6}{7+1} \times 48$ or $\frac{6}{8} \times 48$	M1dep	oe
	36	A1	
	Additional Guidance		
	Allow a maximum of one error overall in build-up methods		

Q	Answer	Mark	Comments
	Fully correct diagram	B2	B1 6 cm square (3 or 4 sides drawn) or 3 cm radius (semi) circle or radius half the length of their square and complete shape drawn
16	**Additional Guidance**		
	Condone additional interior line(s)		
	Mark intention but whole shape must be on the grid		
	Shape may be in any orientation		

Q	Answer	Mark	Comments
17	**Alternative method 1**		
	Fully correct method	M2	eg $60 \div 5 \times 3$ M1 correct first step using one operator eg $60 \div 5$ or 12
	36	A1	
	Alternative method 2		
	A correctly evaluated multiple of 3 miles in the same multiple of 5 minutes	M1	eg 6 (miles) in 10 (minutes)
	their multiple of 3 × (60 ÷ their multiple of 5)	M1dep	eg $(3 \times 2) \times [60 \div (5 \times 2)]$ or 6×6
	36	A1	
	Additional Guidance		
	Up to M2 may be awarded for multiple attempts if no answer chosen		
	For up to M2 ignore any units		
	Working may be in seconds, minutes or hours for up to M2		
	Allow one error in build-up methods in Alt 1		

Q	Answer	Mark	Comments
18	*x*-coordinate of *L* = 4 or *y*-coordinate of *L* = 12 or 4 marked on *x*-axis below *L* and 12 marked on *y*-axis left of *L* or (*x*-coordinate of *M* =) 2 + 2 + 2 or (*y*-coordinate of *M* =) 18 – 3 – 3 – 3 or 6 marked on *x*-axis below *M* or 9 marked on *y*-axis left of *M*	M1	oe
	(*L*) (4, 12) or (*M*) (6, …) or (…, 9) or 6 marked on *x*-axis below *M* and 9 marked on *y*-axis left of *M*	A1	condone missing brackets if intention is clear
	6, 9	A1	SC2 (9, 6)
	Additional Guidance		
	(4, 12 , 6, 9) (ie both sets of coordinates on answer line) correctly assigned to *L* and *M* previously		M1A1A1
	(4, 12 , 6, 9) on answer line not correctly assigned to *L* and *M* previously		M1A1A0
	Accept correct working on diagram and/or correct answer on diagram if not contradicted by answer line		

Q	Answer	Mark	Comments
	2.5×2.5 or $\left(\dfrac{5}{2}\right)^2$	M1	oe oe improper fraction squared
	6.25 or $\dfrac{25}{4}$ or $6\dfrac{1}{4}$	A1	oe decimal, improper fraction or mixed number SC1 answer digits 625

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Additional Guidance

Ignore attempt to simplify or convert if correct fraction seen	
Do not allow further work but condone adjusting place value eg $2.5 \times 2.5 = 6.25$, $6.25 \div 100 = 0.0625$ (adjusting place value) eg $2.5 \times 2.5 = 2.25$, 6.25×2.5 (cubing not squaring)	M1A0 M0A0
$2.5 \times 2.5 = 5$	M1A0
6.25^2 625^2	M1A0 M0A0

Q	Answer	Mark	Comments
20(a)	$\times 5$ and $+4$ or $\div \dfrac{1}{5}$ and $+4$ or $+0.8$ and $\times 5$ or $+0.8$ and $\div \dfrac{1}{5}$	B1	oe decimals or fractions must be in correct order operator must be before number condone use of words

Additional Guidance

$+4x$ and $+4$ (oe using the variable)	B0

Q	Answer	Mark	Comments
20(b)	-6	B1	

Q	Answer	Mark	Comments
20(c)	$\times 6$ or $\div \dfrac{1}{6}$	B1	

Additional Guidance	
$+5x$	B0

Q	Answer	Mark	Comments
21	False True True	B3	B2 two correct B1 one correct

Additional Guidance	
Accept any indication, but if a tick and crosses 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
22(a)	81	B1	

Q	Answer	Mark	Comments
22(b)	-12 and -9	B2	either order B1 first value -12 or second value -9 or second value = their first value $+3$ SC1 -9 and -21

Q	Answer	Mark	Comments
23(a)	7	B1	

Q	Answer	Mark	Comments
23(b)	$2500 \div 20$ or $\dfrac{2500}{20}$	M1	oe eg $250 \div 2$
	125	A1	SC1 digits 125

Additional Guidance	
Ignore units	

Q	Answer	Mark	Comments
24	Correct conversion of or correct method to convert $1\frac{1}{10}$ to $\frac{22}{20}$ or $1\frac{2}{20}$ with no incorrect conversion of $\frac{3}{20}$ or correct method for or correct result of conversion of both fractions to a common denominator $\neq 20$ or $1 - \frac{1}{20}$ or $1.10 - 0.15$ or 0.95	M1	
	$\dfrac{19}{20}$	A1	oe fraction eg $\dfrac{38}{40}$

Additional Guidance		
Ignore attempt to simplify if correct fraction seen		
$\dfrac{22}{20} - \dfrac{3}{20}$		M1
$\dfrac{22}{20} - \dfrac{6}{20}$		M0

Q	Answer	Mark	Comments
25	0	B1	condone 0°

Q	Answer	Mark	Comments
26	15 ÷ 3 or 5	M1	oe may be on the diagram may be seen in a ratio
	π × their 5 × their 5 or 25π or [78.3, 78.6]	M1dep	oe
	π × 15 × 15 or 225π or [706.4, 706.95]	M1	oe
	200π	A1	SC2 200

Additional Guidance	
Condone eg π25 for 25π	
Condone use of $\frac{22}{7}$ or 3.1 or better for π up to M3	
Answer 200 with 200π in working Answer 200 without 200π in working	M1M1M1A0 SC2
Answer [627.8, 628.6]	M1M1M1A0

Q	Answer	Mark	Comments
27(a)	10×12 or 120 or $\frac{10}{15} \times 12$ or $12 \div \frac{15}{10}$ or correct time for any stated number of people other than 10	M1	oe eg 24 hours for 5 people
	8	A1	SC1 480 (minutes)

Additional Guidance	
M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts	
Working may be seen in minutes eg $10 \times 12 \times 60$ or 7200	M1

Q	Answer	Mark	Comments
27(b)	It is less than the answer to (a)	B1	