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# GCSE MATHEMATICS 8300/1F

Foundation Tier Paper 1 Non-Calculator

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Mark scheme

November 2024

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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](https://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.

<b>M</b>	Method marks are awarded for a correct method which could lead to a correct answer.
<b>A</b>	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>B</b>	Marks awarded independent of method.
<b>ft</b>	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
<b>SC</b>	Special case. Marks awarded for a common misinterpretation which has some mathematical worth.
<b>M dep</b>	A method mark dependent on a previous method mark being awarded.
<b>B dep</b>	A mark that can only be awarded if a previous independent mark has been awarded.
<b>oe</b>	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
<b>[a, b]</b>	Accept values between a and b inclusive.
<b>[a, b)</b>	Accept values $a \leq \text{value} < b$
<b>3.14...</b>	Accept answers which begin 3.14 eg 3.14, 3.142, 3.1416
<b>Use of brackets</b>	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)	7	B1	condone $\pm 7$
	Additional Guidance		
	–7 only		B0

Q	Answer	Mark	Comments
1(b)	27	B1	

Q	Answer	Mark	Comments
1(c)	$10^4$	B1	
	Additional Guidance		
	$1 \times 10^4$		B0
	Answer 4		B0

Q	Answer	Mark	Comments
2	$16 \times 3$	M1	oe
	48	A1	accept 3 : 48 or 48 : 3

Q	Answer	Mark	Comments
3(a)	$1\frac{1}{2}$	B1	oe mixed number
	Additional Guidance		
	$1.5 = 1\frac{1}{2}$ $1\frac{1}{2} = 1.5$		B1  B0

Q	Answer	Mark	Comments
3(b)	$\frac{2}{5}$ or 0.4	B1	oe
	<b>Additional Guidance</b>		
	Ignore attempt to simplify or convert if correct fraction seen		

Q	Answer	Mark	Comments
4(a)	1, 2, 4, 5, 10, 20	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
	<b>Additional Guidance</b>		
	Allow values given in pairs eg $1 \times 20$ , $2 \times 10$ , $4 \times 5$ 6 factors eg (2, 10), (4, 5)		B2 B1
	Repeated values score max B1 eg 1, 2, 4, 5, 10, 10, 20 eg 1, 2, 2, 5		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 $5 + 10 = 15$ or $1 \times 5 + 4 \times 5 = 25$ condone 0 as a multiple of 5
	Additional Guidance		
	One correctly evaluated counterexample seen amongst other trials		B1

Q	Answer	Mark	Comments
5	0.7 $\frac{3}{4}$ 80% 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
	<b>Additional Guidance</b>		
	Condone missing percentage signs, eg allow 70 for 70%		
	Correct answer with no working shown		B2
	Accept equivalent forms to the given numbers on the answer line eg 70%    75    80% eg 70    75    80 eg 0.7 $\frac{3}{4}$ $\frac{8}{10}$ eg 7%    75%    80%		B2 B2 B2 B1
	For B1, to be comparable, fractions must have the same denominator or numerator eg $\frac{7.5}{10}$ $\frac{8}{10}$ eg $\frac{3}{4}$ $\frac{8}{10}$ with no further correct work		B1 B0

Q	Answer	Mark	Comments
6	$2 \times 4.5$ or 9	M1	oe
	28.5 – their 9 or 19.5	M1dep	oe
	their $19.5 \div 3$ or 6.5	M1dep	oe dep on M2
	6.50 or 650p	A1	SC2 7.50 condone £6.50p
	<b>Additional Guidance</b>		
	Accept working in pence		
	SC2 is for using £4.50 as the cost of a scarf or interchanging the quantities		

Q	Answer	Mark	Comments
7(a)	80 children and 40 adults	B1	
	45 left (children) and 35 right (children)	B1	
	30 left (adults)	B1ft	ft 75 – their 45, where their 45 is an integer $\geq 0$ and answer an integer $\geq 0$
	10 right (adults)	B1ft	ft their 40 – their 30, where both integers are $\geq 0$ and answer an integer $\geq 0$
	<b>Additional Guidance</b>		
	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)	$\frac{9}{16}$	B2ft	ft their 45 and/or ft their 80 B1ft $\frac{\text{their 45}}{\text{their 80}}$ not fully simplified or correct simplification of their fraction, using numbers from their tree
	<b>Additional Guidance</b>		
	B2ft can only be awarded if their numbers can be simplified, otherwise B1ft		
	Do not ignore further work for B2 after correct answer seen $\frac{9}{16} = \frac{3}{4}$		B1



Q	Answer	Mark	Comments
8	Three from: <ul style="list-style-type: none"> <li>Vertical axis label missing</li> <li>Horizontal axis label missing</li> <li>Width of third bar too wide</li> <li>Height of second bar incorrect</li> </ul>	B3	B2 two bullets satisfied B1 one bullet satisfied
	<b>Additional Guidance</b>		
	Ignore irrelevant but non-contradictory statements		
	Check diagram for comments		
	First bullet Number of students label is missing / $y$ -axis label is missing		B1
	We don't know what the 0 10 20 stand for		B1
	No frequency (label) or No label on the side		B1
	Second bullet No label for where students prefer to revise		B1
	$x$ -axis label missing or No label at the bottom		B1
	Third bullet Bars not equal widths or Two bars are 5 wide and one bar is 7.5 wide		B1
	Third bar wrong size, it's too wide/thick		B1
	Third bar wrong or Third bar wrong size		B0
	Third bar too big / double the width		B0
	Bars are different sizes		B0
	Fourth bullet Second bar should be (one square) higher/taller		B1
	Total should be 135 but chart is 133		B1
	Second bar is 66 or Second bar should be 68		B1
	Second bar is 63 but should be 68		B0
	Data for Home is wrong		B0
	Two marks may be scored in one sentence eg Home bar too short and In Class too wide		B2
	No vertical label and no horizontal label		B2
	No label(s) / Hasn't labelled the chart		B1
	Three valid mistakes with one or more invalid mistakes		B2

Q	Answer	Mark	Comments
9(a)	3 in left column	B1	
	5 in top row	B1	
	All products correct	B2ft	ft their 3 and their 5 B1ft 3 to 10 correctly evaluated products
	<b>Additional Guidance</b>		
	If their 3 is 0, 1 or 5, do not consider those products If their 5 is 0, 2, 3 or 7, do not consider those products		

Q	Answer	Mark	Comments	
9(b)	<u>their number of square numbers</u> their number of completed cells	B2ft	oe fraction ft their table even if incomplete B1ft their number of square numbers as a numerator or their number of completed cells as a denominator or square 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)	$6m + 11$ or $11 + 6m$	B2	B1 $6m$ or $(+)11$
	<b>Additional Guidance</b>		
	Do not ignore further work for B2 eg $6m + 11 = 17m$ eg $6m + 3 = 9m$		B1 B1

Q	Answer	Mark	Comments
10(b)	$3cd$ or $3dc$	B2	B1 3 or $cd$ or $dc$
	<b>Additional Guidance</b>		
	$cd3$		B1
	Use of multiplication signs is max B1 eg $3 \times cd$ eg $c \times d$		B1 B0
	$6\frac{1}{2}cd$ $\frac{1}{2}c6d$ $\frac{1}{2}c3d$		B1 B0 B0

Q	Answer	Mark	Comments
11	<b>Alternative method 1 – total cost then reduction</b>		
	$55 \times 6$ or 330	M1	oe
	their $330 \div 10$ or 33	M1dep	oe
	their $330 - \text{their } 33$ or 297	M1dep	oe dep on M2 $55 \times 6 \times 0.9$ implies M3
	2.97 or 297p	A1	condone £2.97p
	<b>Alternative method 2 – reduction then total cost</b>		
	$55 \div 10$ or 5.5	M1	oe
	$55 - \text{their } 5.5$ or 49.5	M1dep	oe $55 \times 0.9$ implies M2
	their $49.5 \times 6$ or 297	M1dep	oe dep on M2
	2.97 or 297p	A1	condone £2.97p
	<b>Alternative method 3 – buying 10% fewer bags</b>		
	$6 \div 10$ or 0.6	M1	oe
	$6 - \text{their } 0.6$ or 5.4	M1dep	oe $6 \times 0.9$ implies M2
	their $5.4 \times 55$ or 297	M1dep	oe dep on M2
	2.97 or 297p	A1	condone £2.97p
	<b>Additional Guidance</b>		
	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	3	B1	

Q	Answer	Mark	Comments
13	Always true Sometimes true	B2	B1 one correct
	<b>Additional Guidance</b>		
	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	
	<b>Additional Guidance</b>		
	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 $sf \neq \frac{1}{3}$
	<b>Additional Guidance</b>		
	Mark intention but whole shape must be on the grid		
	Shape can be in any position or orientation		

Q	Answer	Mark	Comments
15	<b>Alternative method 1 – Finding the value of one part first</b>		
	$35 \div (6 + 1)$ or 5	M1	oe
	6 × their 5 or 30 or $(6 - 1) \times$ their 5	M1dep	oe
	25	A1	
	<b>Alternative method 2 – Finding the difference in the number of parts first</b>		
	$6 - 1$ or 5	M1	oe
	$\frac{\text{their } 5}{6 + 1} \times 35$ or $\frac{5}{7} \times 35$	M1dep	oe
	25	A1	
	<b>Additional Guidance</b>		
	Allow a maximum of one error overall in build-up methods		

Q	Answer	Mark	Comments
16	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
	<b>Additional Guidance</b>		
	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	<b>Alternative method 1</b>		
	Fully correct method	M2	eg $60 \div 5 \times 4$  M1 correct first step using one operator eg $5 \div 4$ or 1.25
	48	A1	
	<b>Alternative method 2</b>		
	A correctly evaluated multiple of 4 miles in the same multiple of 5 minutes	M1	eg 8 (miles) in 10 (minutes)
	their multiple of $4 \times (60 \div \text{their multiple of } 5)$	M1dep	eg $(4 \times 2) \times [60 \div (5 \times 2)]$ or $8 \times 6$
	48	A1	
	<b>Additional Guidance</b>		
	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 $L = 10$ or $y$ -coordinate of $L = 8$ or 10 marked on $x$ -axis below $L$ and 8 marked on $y$ -axis left of $L$ or ( $x$ -coordinate of $M =$ ) $5 + 5 + 5$ or ( $y$ -coordinate of $M =$ ) $12 - 2 - 2 - 2$ or 15 marked on $x$ -axis below $M$ or 6 marked on $y$ -axis left of $M$	M1	oe
	$(L) (10, 8)$ or $(M) (15, \dots)$ or $(\dots, 6)$  or  15 marked on $x$ -axis below $M$ and 6 marked on $y$ -axis left of $M$	A1	condone missing brackets if intention is clear
	15, 6	A1	SC2 (6, 15)
	<b>Additional Guidance</b>		
	(10, 8 , 15, 6) (ie both sets of coordinates on answer line) correctly assigned to $L$ and $M$ previously	M1A1A1	
	(10, 8 , 15, 6) 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
19	$1.5 \times 1.5$ or $\left(\frac{3}{2}\right)^2$	M1	oe  oe improper fraction squared
	$2.25$ or $\frac{9}{4}$ or $2\frac{1}{4}$	A1	oe decimal, improper fraction or mixed number SC1 answer digits 225
	<b>Additional Guidance</b>		
	Ignore attempt to simplify or convert if correct fraction seen		
	Do not allow further work but condone adjusting place value eg $1.5 \times 1.5 = 2.25$ , $2.25 \div 100 = 0.0225$ (adjusting place value) eg $1.5 \times 1.5 = 2.25$ , $2.25 \times 1.5$ (cubing not squaring)		M1A0 M0A0
	$1.5 \times 1.5 = 3$		M1A0
	$2.25^2$ $225^2$		M1A0 M0A0

Q	Answer	Mark	Comments
20(a)	$\times 4$ and $+ 5$ or $\div \frac{1}{4}$ and $+ 5$ or $+ 1.25$ and $\times 4$ or $+ 1.25$ and $\div \frac{1}{4}$	B1	oe decimals or fractions must be in correct order operator must be before number condone use of words
	<b>Additional Guidance</b>		
	$+ 3x$ and $+ 5$ (oe using the variable)		B0

Q	Answer	Mark	Comments
20(b)	– 8	B1	

Q	Answer	Mark	Comments
20(c)	$\div 6$ or $\times \frac{1}{6}$	B1	
	<b>Additional Guidance</b>		
	– 5x		B0

Q	Answer	Mark	Comments
21	True True False	B3	B2 two correct B1 one correct
	<b>Additional Guidance</b>		
	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)	64	B1	

Q	Answer	Mark	Comments
22(b)	–4 and –13	B2	either order B1 first value –4 or second value –13 or second value = their first value – 9 SC1 –13 and –17

Q	Answer	Mark	Comments
23(a)	8	B1	

Q	Answer	Mark	Comments
23(b)	$3500 \div 20$ or $\frac{3500}{20}$	M1	oe eg $350 \div 2$
	175	A1	SC1 digits 175
	<b>Additional Guidance</b>		
	Ignore units		

Q	Answer	Mark	Comments
24	Correct conversion of or correct method to convert $1\frac{1}{5}$ to $\frac{12}{10}$ or $1\frac{2}{10}$  with no incorrect conversion of $\frac{3}{10}$  or correct method for or correct result of conversion of both fractions to a common denominator $\neq 10$  or $1 - \frac{1}{10}$  or $1.2 - 0.3$ or $0.9$	M1	
	$\frac{9}{10}$	A1	oe fraction eg $\frac{45}{50}$
	<b>Additional Guidance</b>		
	Ignore attempt to simplify if correct fraction seen		
	$\frac{12}{10} - \frac{3}{10}$  $\frac{12}{10} - \frac{6}{10}$		M1  M0

Q	Answer	Mark	Comments
25	1	B1	condone 1°

Q	Answer	Mark	Comments
26	$12 \div 4$ or 3	M1	oe may be on the diagram may be seen in a ratio
	$\pi \times \text{their } 3 \times \text{their } 3$ or $9\pi$ or [28.2, 28.3]	M1dep	oe
	$\pi \times 12 \times 12$ or $144\pi$ or [452.1, 452.45]	M1	oe
	$135\pi$	A1	SC2 135
	<b>Additional Guidance</b>		
	Condone eg $\pi 9$ for $9\pi$		
	Condone use of $\frac{22}{7}$ or 3.1 or better for $\pi$ up to M3		
	Answer 135 with $135\pi$ in working Answer 135 without $135\pi$ in working		M1M1M1A0 SC2
	Answer [423.8, 424.3]		M1M1M1A0

Q	Answer	Mark	Comments
27(a)	$10 \times 9$ or 90 or $\frac{10}{15} \times 9$ or $9 \div \frac{15}{10}$ or correct time for any stated number of people other than 10	M1	oe  eg 18 hours for 5 people
	6	A1	SC1 360 (minutes)
	<b>Additional Guidance</b>		
	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 $10 \times 9 \times 60$ or 5400		M1

Q	Answer	Mark	Comments
27(b)	It is not possible to say	B1	