



GCSE Mathematics

Grades 1-2 Resource Non-Calc Test 1

Mark scheme

8300 Grades 1-2 Resource Non-Calc Test 1

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 Assessment Writer.

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.

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.

Question	Answer	Mark	Comments
1	125	B1	
2	Alternative method 1		
	$90 \div 10$ or 9	M1	oe
	their 9×15	M1dep	oe
	135(.00)	A1	
	Alternative method 2		
	$15 \div 10$ or 1.5 or $10 \div 15$ or $\frac{2}{3}$	M1	oe
	$90 \times$ their 1.5 or $90 \div$ their $\frac{2}{3}$	M1dep	oe
	135(.00)	A1	
	Alternative method 3		
	$90 \div (10 \div (15 - 10))$ or 45	M1	oe
	$90 +$ their 45 or their 45×3	M1dep	oe
	135(.00)	A1	
	Additional Guidance		
	Allow one error in a build-up method		

Question	Answer	Mark	Comments
3	20 or 19 and no incorrect evaluations and 3rd box indicated	B2	oe eg 30 and 29 and no incorrect evaluations and 3rd box indicated B1 20 or 19 or incorrect values seen and correct box indicated for their values SC1 3rd box indicated but no evaluations seen
	Additional Guidance		
	14 and 39 and 1st box indicated		B1
	Ignore any incorrect statements such as $20 < 19$ if the correct box is ticked as they may be checking each statement		

Question	Answer	Mark	Comments
4	Total for Screen 2 is 261	B1	
	Total is 348	B1ft	ft 87 + their 261
	Full price for Screen 1 is 72	B1	
	Child price for Screen 2 is 53	B1	
	Full price for Screen 2 is 208	B1ft	ft if their full price value for Screen 2 and their child price value for Screen 2 sum to their total for Screen 2 or their two full price values and their two child price values sum to their overall total
	Additional Guidance		
	Mark the diagram, but if diagram completely blank, accept answers in working only if absolutely clear which entry is being referenced		
	Example of final B1ft: Screen 2 Child Price recorded as 68, leads to 193 as Screen 2 full price		
	<pre> graph LR 348((348)) --- Screen 1 87((87)) 348 --- Screen 2 261((261)) 87 --- Full 72((72)) 87 --- Child 15((15)) 261 --- Full 208((208)) 261 --- Child 53((53)) </pre>		B5

Question	Answer	Mark	Comments
5	30	B1	
	20	B1	
	(30 and 20 and) 600	B1ft	ft their $30 \times$ their 20 with B1B0 or B0B1 SC1 ($31 \times 18 =$) 558, answer 560
	Additional Guidance		
	Answer 600 with no working		B1B1B1
	Answer 558 with neither 30 nor 20 seen		B0B0B0
	30×18 with answer 540 31×20 with answer 620 and answer 600 (ignore further work) 31×20 with answer 600		B1B0B1ft B0B1B1ft B0B1B0ft
6	$\frac{3}{5}$	B2	B1 $\frac{18}{30}$ or $\frac{9}{15}$ or $\frac{6}{10}$ or 3 out of 5 oe fraction, decimal or percentage or their fraction fully simplified
	Additional Guidance		
	$\frac{30}{18} = \frac{5}{3}$ $\frac{1.8}{3(.0)}$		B1 B1

Question	Answer	Mark	Comments
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	Alternative method 1 – using the given scale		
7	(O) $20 \div 5$ or (A) $8 \div 2$ or 4 or (O) $5 \div 20$ or (A) $2 \div 8$ or $\frac{1}{4}$	M1	oe
	their 4×3 or $3 \div$ their $\frac{1}{4}$ or their $4 \times$ their $(5 + 3 + 2) - 20 - 8$ or 12	M1dep	20 – 8 implies M2 may be on diagram
	Correct width bar, in the correct position, drawn to height of 12	A1	mark intention, ignore any shading
	Alternative method 2 – using squares		
	(O) $10 \div 5$ or (A) $4 \div 2$ or 2 (squares)	M1	
	their 2×3 or 6 (squares)	M1dep	10 – 4 implies M2 may be on diagram
	Correct width bar, in the correct position, drawn to height of 12	A1	mark intention, ignore any shading
	Additional Guidance		
	$(20 + 8) \div (5 + 2)$ $(10 + 4) \div (5 + 2)$	M1 M1	

Question	Answer	Mark	Comments																							
8	16 in top row	B1																								
	5 in left column	B1																								
	All totals correct or All totals correct including for their 16 and their 5	B2ft	B1ft for seven or more correct totals for the given numbers and their 16 and their 5 (if present) If their 16 is 0, 1, 4 or 9, do not consider those totals If their 5 is 0, 2, 3 or 7, do not consider those totals																							
	Additional Guidance																									
	Fully correct table		B4																							
	<table><tr><td>+</td><td>1</td><td>4</td><td>9</td><td>16</td></tr><tr><td>2</td><td>3</td><td>6</td><td>11</td><td>18</td></tr><tr><td>3</td><td>4</td><td>7</td><td>12</td><td>19</td></tr><tr><td>5</td><td>6</td><td>9</td><td>14</td><td>21</td></tr><tr><td>7</td><td>8</td><td>11</td><td>16</td><td>23</td></tr></table>			+	1	4	9	16	2	3	6	11	18	3	4	7	12	19	5	6	9	14	21	7	8	11
+	1	4	9	16																						
2	3	6	11	18																						
3	4	7	12	19																						
5	6	9	14	21																						
7	8	11	16	23																						
9	46 ÷ 2 or 23 or 4x = 46	M1	oe																							
	their 23 ÷ 2 or 46 ÷ 2 ÷ 2 or 46 ÷ 4	M1dep	Oe may be seen as a fraction eg $\frac{23}{2}$ or $11\frac{1}{2}$ or $\frac{46}{4}$ or $11\frac{2}{4}$																							
	11.5	A1	SC2 5.75 or 11 remainder 1																							
	Additional Guidance																									
	46 ÷ 2 = 25, (25 ÷ 2 =) 12.5		M1M1A0																							
	46 ÷ 2 = 24, followed by 11		M1M0A0																							
	11.5 in working, different answer on answer line (do not ignore further work)		M1M1A0																							

Question	Answer	Mark	Comments
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10	Alternative method 1											
	73 × 58 584 3650 or 58 × 73 174 4060	M1	At least one row correct, with the 0 correct for multiplication by the multiple of 10 You may see the rows of working switched									
	their 174 + their 4060 or their 584 + their 3650	M1dep										
	4234	A1										
	Alternative method 2											
	<table><tr><td></td><td>50</td><td>8</td></tr><tr><td>70</td><td>3500</td><td>560</td></tr><tr><td>3</td><td>150</td><td>24</td></tr></table>		50	8	70	3500	560	3	150	24	M1	At least three correct values
		50	8									
	70	3500	560									
3	150	24										
their 3500 + their 560 + their 150 + their 24	M1dep											
4234	A1											

Question	Answer	Mark	Comments
10 cont	Alternative method 3		
		M1	At least three of the 2-digit numbers correct
	Total calculated for each diagonal with at least one correct carrying figure	M1dep	Clear attempt to add each diagonal
	4234	A1	
	Additional Guidance		
	$50 \times 70 + 8 \times 3 \quad (= 3524)$		M0M0A0
	Alternative method 1 – if the place holder 0 is missing or mis-aligned, allow this to be evidenced by their 4 as the units value in their answer		
	For alternative method 3, diagonals must slope the correct way		
	Diagonal lines not present is M0 unless this is recovered by seeing correct totals around the grid		
	Example of alternative method 3 with carrying completed once 		M1M1depA0

Question	Answer	Mark	Comments
11	Line drawn due South from E (any length) or [4.3, 5.1]	M1	mark intention on 'south' mark intention on 'line' accept a cross on coast roughly south of E
	their value $\times 100$	M1	[430, 510] implies M2 eg 1.3×100
	[450, 490] and correct for their value	A1	SC1 600 [450, 490] scores M1M1A1 unless error seen
	Additional Guidance		
	Line drawn or no line drawn and $4.6 \times 100 = 465$ (within range but not correct for their value)		M1M1A0
	No line drawn and $4.2 \times 100 = 420$		M0M1A0
	600 may score up to M2, only award SC1 if M0 scored		
	If line goes North as well as South of E , working must choose the South direction length (in range) for at least 1st M1 (but 2nd M1 could still be scored)		
	If line does not reach coast or goes beyond coast, full marks can still be awarded for a correct method with correct answer within range		
	Ignore units throughout eg $4.8 \times 100 = 480$ cm		M1M1A1

Question	Answer	Mark	Comments
12	Alternative method 1 – coaches, income, fuel, drivers, profit, answer		
	6	B1	number of coaches
	300 × 25 or 7500 or 50 × 25 or 1250	M1	total income for one or all coaches
	(their 6) × 200 × 0.7 or 140 or 840 or (their 6) × 200 × 70 or 14 000 or 84 000	M1	cost of fuel for one or all coaches 140 is implied by 230 (fuel + one driver)
	their 6 × 90 or 540 or their 1250 – their 140 – 90 or 1020	M1	cost of all drivers or profit for one coach
	their 7500 – their 840 – their 540 or their 6 × their 1020	M1dep	oe method to calculate profit must be consistent units dependent on M3
	6120	A1	

Question	Answer	Mark	Comments
12(cont)	Alternative method 2 – profit per passenger		
	$90 \div 50$ or 1.8(0)	B1	cost per passenger for a driver
	200×0.7 or 140 or 200×70 or 14 000	M1	cost of fuel per coach
	their $140 \div 50$ or 2.8(0) or their $14\,000 \div 50$ or 280	M1dep	cost per passenger for the fuel dependent on M1
	$25 - \text{their } 1.8(0) - \text{their } 2.8(0)$ or 20.4(0)	M1dep	oe profit made per passenger must be consistent units dependent on B1M1M1
	their $20.4(0) \times 300$	M1dep	method to calculate total profit must be consistent units dependent on previous mark
	6120	A1	
	Additional Guidance		
	$540 + 840$ or 1380 (without evidence for the second mark)	B1M0M1M1 (Alt 1)	
	6 (for B1) may be implied by a calculation or value such as 540	(Alt 1)	
13	$5 \times 7 \times 10$	M1	
	350	A1	
	Additional Guidance		
	Ignore further “method” for M1 eg $5 \times 7 \times 10 \div 2 = 175$ however $5 \times 7 \times 10 \times 5 \times 7 \times 10$ or 350^2 is M0A0	M1A0	
	ignore units		

Question	Answer	Mark	Comments
14a	12.2(0) – 8.65 or answer with 55p or 355	M1	oe
	3.55	A1	accept 355p SC1 6.85 or 685p (Company B used)
	Additional Guidance		
	Answer with 55p eg 4.55 or 455p eg 455		M1A0 M0A0
	Condone £3.55p		M1A1

Question	Answer	Mark	Comments
14b	7.25×12 or 725×12	M1	oe eg $7 \times 12 + 0.25 \times 12$ accept repeated addition of twelve 7(.)25s
	Correct vertical method of long multiplication with at least one of 1450 and 7250 correct or Correct set up of grid method with at least three products correct or Correct set up of Gelosia method with at least three products correct or $10 \times 725 = 7250$ and $2 \times 725 = 1450$ attempted with at least one correct or $12 \times 700 = 8400$ and $12 \times 20 = 240$ and $12 \times 5 = 60$ attempted with at least one correct	M1dep	oe allow a placeholder space to be present instead of a physical zero in vertical method
	87(.00)	A1	SC2 103.8(0) or 146.4(0) or 169.2(0) or 190.8(0) or 256.2(0) or 250.2(0) or 315.6(0) SC1 8.65×12 or $12.2(0) \times 12$ or $14.1(0) \times 12$ or $15.9(0) \times 12$ or 21.35×12 or 20.85×12 or $26.3(0) \times 12$
	Additional Guidance		
	Condone 87.0	M2A1	
	Accept answers in pence		
	Condone p after their final answer eg £87.00p		
	Method of repeated addition must have no more than one error. If broken down into groups, the one error made may be seen multiple times		

Question	Answer	Mark	Comments
15	$28 : 12$ or $14 : 6$ or $56 \div 8$ and $24 \div 8$ (may be done in stages) or 3 and 7 seen	M1	
	$7 : 3$	A1	