



**General Certificate of Secondary Education
2025**

Mathematics

M2

Calculator Paper

Foundation Tier

[GMC21]

THURSDAY 15 MAY, 9.15AM–11.00AM

**MARK
SCHEME**

GCSE MATHEMATICS

Introduction

The mark scheme normally provides the most popular solution to each question. Other solutions given by candidates are evaluated and credit given as appropriate; these alternative methods are not usually illustrated in the published mark scheme.

The marks awarded for each question are shown in the right hand column and they are prefixed by the letters **M**, **W** and **MW** as appropriate. The key to the mark scheme is given below:

M indicates marks for correct method.

W indicates marks for working.

MW indicates marks for combined method and working.

The solution to a question gains marks for correct method and marks for an accurate working based on this method. Where the method is not correct no marks can be given.

A later part of a question may require a candidate to use an answer obtained from an earlier part of the same question. A candidate who gets the wrong answer to the earlier part and goes on to the later part is naturally unaware that the wrong data is being used and is actually undertaking the solution of a parallel problem from the point at which the error occurred. If such a candidate continues to apply correct method, then the candidate's individual working must be followed through from the error. If no further errors are made, then the candidate is penalised only for the initial error. Solutions containing two or more working or transcription errors are treated in the same way. This process is usually referred to as "follow-through marking" and allows a candidate to gain credit for that part of a solution which follows a working or transcription error.

Positive marking:

It is our intention to reward candidates for any demonstration of relevant knowledge, skills or understanding. For this reason we adopt a policy of **following through** their answers, that is, having penalised a candidate for an error, we mark the succeeding parts of the question using the candidate's value or answers and award marks accordingly.

Some common examples of this occur in the following cases:

- (a) a numerical error in one entry in a table of values might lead to several answers being incorrect, but these might not be essentially separate errors;
- (b) readings taken from candidates' inaccurate graphs may not agree with the answers expected but might be consistent with the graphs drawn.

When the candidate misreads a question in such a way as to make the question easier only a proportion of the marks will be available (based on the professional judgement of the examining team).

General Marking Advice

- (i) If the correct answer is seen in the body of the script and the answer given in the answer line is clearly a transcription error, full marks should be awarded.
- (ii) If the answer is missing, but the correct answer is seen in the body of the script, full marks should be awarded.
- (iii) If the correct answer is seen in working but a completely different answer is seen in the answer space, then some marks will be awarded depending on the severity of the error.
- (iv) Work crossed out but not replaced should be marked.
- (v) In general, if two or more methods are offered, mark only the method that leads to the answer on the answer line. If two (or more) answers are offered (with no solution offered on the answer line), mark the poorest answer.
- (vi) For methods not provided for in the mark scheme, give as far as possible equivalent marks for equivalent work.
- (vii) Where a follow through mark is indicated on the mark scheme for a particular part question, the marker must ensure that you refer back to the answer of the previous part of the question.
- (viii) Unless the question asks for an answer to a specific degree of accuracy, always mark at the greatest number of significant figures seen, e.g. the answer in the mark scheme is 4.65 and the candidate then correctly rounds to 4.7 or 5 on the answer line. Allow full marks for 4.65 seen in the working.
- (ix) Anything in the mark scheme which is in brackets (...) is not required for the mark to be earned, but if present it must be correct.
- (x) For any question, the range of answers given in the mark scheme is inclusive.

			AVAILABLE MARKS
1	$8 + 4 \times 5 = 28$	A1	2
	$(8 + 4) \times 5 = 60$	A1	
2	(a) 43.8	A1	3
	(b) 4000 (accept 4 Thousand)	A1	
	(c) 0.61, 0.605, 0.6	A1	
3	(a) $h + 5$	A1	2
	(b) $2h + 5$	MA1	
4	(a) $7.50 + 5.45 = 12.95$	M1 A1	5
	(b) $2 \times 13.50 + 3 \times 6.75 = 47.25$	M1 A1	
	no, $47.25 - 37.50 = \text{£}9.75$, which is less than $\text{£}10$	MA1	
5	(a) 67 ± 2	A1	5
	(b) (i) 7.2 ± 0.2	A1	
	(ii) 72 ± 2	A1	
	(c) (i) It is an acute angle/it is less than 90° .	A1	
	(ii) Used the wrong scale on the protractor.	A1	
6	(a) Friday	A1	5
	(b) Total cod = 78 and/or total haddock = 77 No (must be supported by some evidence)	MA1 A1	
	(c) Cod bar drawn correctly at 27 Haddock bar drawn correctly at 28	A1 A1	
7	$50 - 23 = 27$	MA1	2
	$27 - 5 = 22$	A1	

			AVAILABLE MARKS
8	(a) $50 \times 50 \times 40$ 100 000	MA1 A1	5
	(b) 60 000 $\frac{60\,000}{(50 \times 50)}$ 24	A1 MA1 A1	
9	$6.5 \times 14.80 = 96.20$ $113 - 96.20 = 16.80$ $16.80 \div 5 = 3.36$	MA1 MA1 MA1	3
10	Sue: $9600 \div 100 \times 26 = 2496$; $9600 - 2496 = 7104$ John: $9975 \div 7 \times 2 = 2850$; $9975 - 2850 = 7125$ John by 21	M1 A1 M1 A1 MA1	5
	Alternative solution Sue: $0.74 \times 9600 = 7104$ John: $\frac{5}{7} \times 9975 = 7125$ John by 21	M1 A1 M1 A1 MA1	
11	(a) $5c - 2d$	A1 A1	3
	(b) $10t + 25$	A1	
12	$(180 - 50) \div 2 = 65$ $(180 - 40) \div 2 = 70$ $180 - (65 + 70) = 45$	MA1 MA1 MA1	3
13	(a) $360 \div 24 = 15$ or 15 written in the table for Housework 135 written in table for Working	MA1 A1	6
	(b) Sectors correctly drawn at 15° and 135° ($\pm 2^\circ$) Sectors correctly labelled	A1 A1	
	(c) The angle is 75 out of 360, but 75% is 75 out of 100 No (must be supported by some evidence)	A1 A1	
	Alternative solution $\frac{75}{360} \times 100 = 20.83\%$ not 75% No (must be supported by some evidence)	A1 A1	

			AVAILABLE MARKS
14	$2 \quad 2.5 \quad 0.02 \quad 0.2$ (equivalent form) $2.5 - 0.02$ 2.48	MA1 MA1 A1	3
15	$8300 \div 103750 \times 100 = 8$	M1 A1	2
16	$50 \times \text{£}10 = \text{£}500$ $120 \times \text{£}5 = \text{£}600$ $18 \times \text{£}20 = \text{£}360; 12 \times \text{£}50 = \text{£}600$ Total = £2060	MA1 MA1 MA1 A1	4
17	$45\% \text{ of } 540 = 243$ $540 - 243 = 297$ $\frac{2}{3} \times 297 = 198$	MA1 MA1 MA1	3
18	$200 - 3x$	A1 A1	2
19	$3y - 21 = 18$ $3y = 39$ $y = 13$	MA1 MA1 MA1	
	Alternative solution		
	$y - 7 = 6$ $y = 6 + 7$ $y = 13$	MA1 MA1 MA1	3
20	(a) No of pupils 4, 8, 5, 3 Totals 4, 16, 15, 12	A1 A1	
	(b) $47 \div 20$ 2.35	MA1 A1	
	(c) 3	A1	5
21	Area of triangle = $6 \times 2 \div 2$ = 6 Area of badge = $10 + 6 + 6 = 22$ $100 \div 10 = 10$ and $100 \div 5 = 20$ No of badges = $10 \times 20 = 200$ Total area of badges = $200 \times 22 = 4400$ $10000 - 4400 = 5600$	MA1 MA1 MA1 MA1 MA1 A1	6

		AVAILABLE MARKS	
22	28 has factors 1, 2, 4, 7, 14, 28 42 has factors 1, 2, 3, 6, 7, 14, 21, 42 HCF = 14	MA1 MA1 A1	3
23	15% of 60 = 9 AB = 69 20% of 60 = 12 BC = 48 Original perimeter = 240 cm New perimeter = 234 cm % change = $\frac{6}{240} \times 100 = 2.5\%$ decreased by 2.5%	MA1 MA1 MA1 MA1 A1 MA1	
	Alternative solution		
	15% of 60 = 9 $2 \times 9 = 18$ 20% of 60 = 12 $2 \times 12 = 24$ change in perimeter = 6cm % change = $\frac{6}{240} \times 100 = 2.5\%$ decreased by 2.5%	MA1 MA1 MA1 MA1 A1 MA1	6
24	(1, 10)	A1 A1	2
25	$4a - 2 = 24$ $4a = 26$ $a = 6\frac{1}{2}$ or equivalent	MA1 MA1 MA1	3
26	$\pi \times 6^2 \times 18$ 2035.75(204)	M1A1 A1	3
27	(a) 20 (b) 8	MA1 MA1	2
28	$x^2 = 10^2 - 6^2$ $x^2 = 64$ $x = 8$ $A = \frac{1}{2} \times 13 \times 6 = 39$	MA1 MA1 MA1 MA1	4
		Total	100