

GCSE MARKING SCHEME

SUMMER 2024

GCSE
MATHEMATICS
UNIT 1 – INTERMEDIATE TIER
3300U30-1

About this marking scheme

The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

This marking scheme reflects the criteria by which this assessment was marked in a live series and was finalised following detailed discussion at an examiners' conference. A team of qualified examiners were trained specifically in the application of this marking scheme. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners. It may not be possible, or appropriate, to capture every variation that a candidate may present in their responses within this marking scheme. However, during the training conference, examiners were guided in using their professional judgement to credit alternative valid responses as instructed by the document, and through reviewing exemplar responses.

Without the benefit of participation in the examiners' conference, teachers, learners and other users, may have different views on certain matters of detail or interpretation. Therefore, it is strongly recommended that this marking scheme is used alongside other guidance, such as published exemplar materials or Guidance for Teaching. This marking scheme is final and will not be changed, unless in the event that a clear error is identified, as it reflects the criteria used to assess candidate responses during the live series.

WJEC GCSE MATHEMATICS

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Unit 1: Intermediate Tier	Mark	Comments
1.(a)(i) 81 000 ISW	B2	Accept 8·1 × 10 ⁴ . B1 for sight of one of the following: • 81 • 1000.
1.(a)(ii) 0·2 or equivalent	B1	Mark final answer. Accept ·2 and 0·200
1.(a)(iii) 10·44	B1	
1.(b) $\frac{1}{14}$	B2	Mark final answer. Award B1 for the appropriate sight of one of the following: • any fraction equivalent to $\frac{1}{14}$, e.g. $\frac{2}{28}$ • $\frac{1}{7} \times \frac{1}{2}$.
2.(a) 0.5 kg	B1	
2.(b) 24 km	B1	
3. (The first three terms are) 4, 9 and 14 (Sum =) 27	B2	 May be in any order or in a sequence with other subsequent terms. Award B1 for one of the following: any two of 4, 9 and 14 given as first three terms e.g1, 4, 9 -1, 4, 9, 14 6, 11, 16 (from using 5n + 1) 4n, 9n, 14n. FT their unambiguously identified first three terms, provided at least B1 previously awarded (but not from 4n, 9n, 14n). Award all three marks for an unsupported answer of
3. <u>Alternative Method</u> $(Sum =) 5 (1 + 2 + 3) - 3 \times 1 \text{ or equivalent}$ $= 30 - 3$ $= 27$	M1 M1 A1	27. FT 'their 5 (1 + 2 + 3)' – 'their 3 × 1'.
4. $(x = 180 -) 90 - 64$ or equivalent $= 26(°)$	M1 A1	Check diagram for answers but answer line takes precedence.
(y =) 26(°)	B1	FT y = 'their x'.
$(z =) \frac{180 - 26}{2} = 77(^{\circ})$	M1 A1	FT 'their y ', provided $y \neq 90^{\circ}$ or 60°.

Unit 1: Intermediate Tier	Mark	Comments
5.(a) A correct explanation given.	E1	Allow any unambiguous explanation.
e.g. '(equal) groups do not reach 20',		
'12 to 15 and 16 to 19 so no 20',		Do not accept:
' to reach 20 the groups are not equal'		'because there's only 20 attempts'.
'it only goes up to 19'		
'20 not included'.		Award E1 if incorrect values are given in the table but
		correct explanation given.
5.(b) (0 to 6) 7 to 13 14 to 20	B1	Answer in table takes precedence.
5.(c)(i) 17 or equivalent ISW	B1	B0 for incorrect notation
100		e.g. '17 in 100', '17 out of 100', '17:100' etc.
5.(c)(ii) A correct explanation given	E1	Allow any unambiguous explanation.
e.g.		
'the eleven competitors might have all scored 20',		E0 for mixing number of competitors and number of
'only one of them (might have) scored 19',		points scored.
'we don't know how many competitors scored 19'		e.g. '11 points were scored for 18, 19, 20'
'the probability of scoring 18, 19 or 20 is 11'		'18, 19 or 20 people could have scored 11'.
100		
'the 11 could include (the scores of) 18 and 20'		
'it doesn't tell you the exact score of all 11		
competitors'	1.44	N/ ((0 00
6.(a) <u>96</u> (x 100) or equivalent 300	M1	M1 for sight of 0·32.
= 32(%)	A1	
, ,		Note: other complete valid methods to look out for
		include:
		• 96 ÷ 3
		• 10% + 10% + 10% + 1% + 1%
		(=30 + 30 + 30 + 3 + 3)
		• (96 out of 300 =) 32 out of 100 = 32(%).
6.(b) (£)48 ÷ 8 or (£)6	M1	Sight of an appropriate 6 (or 42) implies M1.
(£)6 AND (£)42 ISW	A1	Allow in any order.
		Allow $(£)6: (£)42 \text{ or } (£)42: (£)6.$
7()(1)	D4	Morte final angues
7.(a)(i) $7(2a-5)$	B1	Mark final answer.
		Allow:
		• $7 \times (2a-5)$
		• $-7(-2a+5)$
		• $7(2a+-5)$
		\bullet $(2a-5)\times 7$
		• $(2a-5)7$.
		,
7.(a)(ii) $x(5+x)$	B1	Mark final answer. Allow:
		• $x(x+5)$
		$\bullet 1x(5+x)$
		$\bullet (1)x \times (5+x)$
		$\bullet (5+x)x$
		$\bullet (5+x)\times x.$

Unit 1: Intermediate Tier	Mark	Comments
7.(b) $\frac{x}{3} = 4$	B1	
x = 12	B1	FT only from $\underline{x} = k$, provided $k \neq 9$. An unsupported answer of 12 is awarded B1B1. $x = 4 \times 3$ is awarded B1B0. Allow B1B1 for a correct embedded answer BUT only B1B0 if contradicted by $x \neq 12$.
7.(b) Alternative method $x + 15 = 27$ $x = 12$	B1 B1	FT only from $x + 5 = 27$ ($x = 22$) or $x + 15 = 9$ ($x = -6$) An unsupported answer of 12 is awarded B1B1. $x = 27 - 15$ is awarded B1B0. Allow B1B1 for a correct embedded answer BUT only B1B0 if contradicted by $x \ne 12$.

Unit 1: Intermediate Tier	Mark	Comments
8. (Probability of winning score =)	B2	Award B2 for sight of
3		$\bullet \frac{1}{4} \times \frac{3}{5}$
- or equivalent		4 5 • '3 winners out of 20'
		the 3 winning combinations/scores clearly
		identified in a list/table of the 20 possible
		combinations/scores.
		B2 may be implied in later workings.
		Award B1 for one of the following:
		 for convincing identification of the 20
		combinations/scores, for example:
		✓ sight of 20
		√ 4 × 5
		✓ showing all 20 correct combinations
		10 + 1,10 + 2with no extras ✓ all 20 correct scores listed with no extras
		✓ completed sample space drawn (4 by 5)
		✓ sight of $\frac{1}{4}$ AND $\frac{3}{5}$ or equivalent.
		identifying the three correct possible winning
		scores (43, 44, 45) with no extras
		identifying the three correct winning combinations (40 + 2, 40 + 4, 40 + 5) with no
		combinations (40 + 3, 40 + 4, 40 + 5) with no extras
		3
		• $\frac{3}{x}$ provided $x > 3$ and correct winning
		combinations/scores identified
		• $\frac{y}{20}$ provided with $y < 20$
		³ / ₂₀ from incorrect winning combinations or
		scores identified
		<u>strict FT</u> from 'their list' provided clearly <i>'their number of winning scores'</i>
		stated refer total number of possibles scores
		their total number of possibles seeres.
(Number of winners =) $\frac{3}{20} \times 100$ or equivalent	M1	Award M1 for $\frac{1}{4} \times \frac{3}{5} \times 100$.
(Namber of Williams) = 7 20 × 100 of equivalent		May be implied e.g. $100 \div 20 = 5$, $5 \times 3 = 15$.
		FT 'their probability of winning score' × 100, provided
		'their probability of winning score' < 1, or $\neq \frac{x}{100}$.
		M0 awarded if 'their probability of winning score' is
		simplified incorrectly.
= 15	A1	May be implied by '15 out of 100' or equivalent.
		If 15 is not seen but final answer of £15 is given (i.e.
		'people' confused with 'money') then allow only
		M1A0.
		Answer must be whole number.
(Profit =) (£)100 – 15 × (£)5 OR	M2	ET 'their number of winners' provided 4.2 and 400
(Profit =) $(£)100 - 15 \times (£)5$ OR $(£)85 - 15 \times (£)4$	ıvı∠	FT 'their number of winners', provided ≠ 3 and <100. Award M1 for one of the following:
(2,00 10 x (2)4		15 × (£)5
		an appropriate sight of (£)75
		 their number of winners'x (£)5
		• 'their number of winners'× (£)5 evaluated
		correctly
		• (£)100 – (£)15 AND 15 × (£)4
		• (£)100 – 'their number of winners' × (£)1 AND
		'their number of winners' × (£)4.
= (£)25	A1	FT provided M2 (not M1M1) previously awarded.
		An unsupported answer of (£)25 is awarded B2
		M1A1M2A1.

Unit 1: Intermediate Tier	Mark	Comments
8. Alternative method for the final 5 marks		
Must clearly be working with groups of 20		
throughout $20 \times (£)1 - 3 \times (£)5$	M2	Method must be seen for M2. FT 'their 20' \times (£)1 – 'their 3' \times (£)5.
(£)5	A1	May be implied in later working.
× 5	m1	FT 100 ÷ 'their 20'
=(£)25	A1	
9.(a) Correct reflection.	B2	 Overlay Award B1 for one of the following: line x = −1 drawn correct reflection in line y = −1 a correct reflection with only one other incorrect reflection seen.
9.(b) Correct enlargement. 154 153 153 154 155 155 155 155 155 155 155 155 155	В3	 Award B2 for one of the following: an enlargement of scale factor 2 with correct orientation but not from centre (1,3) an enlargement of scale factor 3 from centre (1,3) 4 correct vertices plotted but not joined. Award B1 for one of the following: an enlargement of scale factor 2 with incorrect orientation sight of appropriate 4 'rays' from point (1,3) an enlargement of scale factor 3 with correct orientation but not from centre (1,3) an enlargement of scale factor 2 of one of the sides, with correct orientation, from centre (1,3). (The side must be part of a rectangle).
10.(a) 0-25	B1	

Unit 1	: Intermediate Ti	er	Mark	Comments
10.(b)				May be seen in stages.
	80	4	M1	Award M1 for appropriate calculation seen.
	40×0.5 $\frac{2}{0.5}$	4	A1	Award A1 for the correct estimate for the calculation seen.
	$\frac{0.5}{80}$	4		An unsupported answer is M0A0.
	$\frac{79}{40 \times 0.5}$	$3.95 \text{ or 4 or } 3^{\frac{19}{20}}$		
	$\frac{79}{20}$	$3.95 \text{ or } 4 \text{ or } 3\frac{19}{20}$		
	79.3 20	3-965 or 3-97 or 4		
	$\frac{79.34}{20}$	3-967 or 3-97 or 4		
10.(c)	$4\frac{1}{2}$ or	4.5 or $\frac{9}{2}$	В3	Mark final answer. Award B2 for an unsimplified evaluation as a single fraction or mixed number e.g. • $4\frac{7}{14}$ • $3\frac{21}{14}$ • $\frac{63}{14}$ • $\frac{441}{98}$ or equivalent • $4+\frac{1}{2}$. FT for one of the following: • adding 'their improper fractions' (which incorporate the entire numbers) provided fractions have a common denominator (one numerator must be correct) and answer given in a (proper or improper) simplified form • $3+$ 'their fractions' evaluated correctly and in a simplified form, provided fractions have a common denominator (one numerator must be correct) • 'their $3'+1.5$ (or equivalent) in a simplified form • $a+\frac{1}{2}$ (or equivalent in its simplified form) evaluated provided $\frac{1}{2}$ has come from two fractions with a common denominator (e.g. $\frac{10}{14}+\frac{11}{14}=\frac{21}{14}=1\frac{7}{14}+3=3\frac{1}{2}$). Award B1 for sight of two fractions with a common denominator (allow an error in one numerator) e.g. • $(1)\frac{10}{14}+(2)\frac{11}{14}$ • $\frac{24}{14}+\frac{39}{14}$ • $\frac{168}{98}+\frac{273}{98}$ or equivalent. An unsupported answer of $4\frac{1}{2}$ or 4.5 or $\frac{9}{2}$ is awarded B3.

Unit 1: Intermediate Tier	Mark	Comments
11. (Area of triangle <i>ABC</i> or area of cross-section =) $\frac{9 \times 10}{2}$	M1	
$= 45 \text{ (cm}^2\text{)}$	A1	May be seen in later working.
(Volume of prism =) 45×20 = 900 (cm ³)	M1 A1	FT 'their area of cross section'. CAO.
		An unsupported answer of 900 (cm³) is awarded M1A1M1A1.
11. Alternative method (Volume of prism =) $9 \times 10 \times 20$	M2	
$= 900 (cm^3)$	A2	CAO. A1 for sight of $1800/2$ or 9×100 or 90×10 or 45×20 or equivalent (i.e. one step left to carry out)
11. Organisation and Communication.	OC1	For OC1, candidates will be expected to: • present their response in a structured way • explain to the reader what they are doing at each step of their response • lay out their explanation and working in a way that is clear and logical • write a conclusion that draws together their results and explains what their answer means
Accuracy of writing.	W1	For W1, candidates will be expected to:
12. Correct construction of bisector of angle ABC	B1	Correct construction arcs (initial and secondary) and a line joining <i>B</i> to the point of intersection of the arcs must be seen or an alternative valid method.
Correct construction of perpendicular bisector of BC	B1	Two correct pairs of intersecting construction arcs and a line joining both of these points of intersection must be seen.
Correct position of point P	B1	CAO. Award B1 for the correct point of intersection and not labelled <i>P</i> , provided no other incorrect points are indicated. (May be awarded from previous B0B0.)

Unit 1: Intermediate Tier	Mark	Comments
13. Sight of $7(x + 8)$ or equivalent AND Sight of $3(x + 1)$ or equivalent	B1	Check diagram for answers. Brackets must be seen unless implied in later correct working.
7(x+8) + 3(x+1) = 89 or equivalent 7x + 56 + 3x + 3 = 89 10x = 30	B1 B1 B1	FT 'their expressions' provided of equivalent difficulty. Equating the sum of their two area expressions to 89. Correct expansion in an equation. FT only from $ax \pm b \pm cx \pm d = k$, provided working with area.
x = 3	B1	FT from any equation of the form $fx = g$. Answer must be > -1 on FT. Accept an answer rounded, truncated, or as an improper fraction (if not whole number) on FT. Mark final answer. If the first B0 or B1 awarded, then award an additional SC2 for $x = 3$ clearly identified as a final answer if no correct equation shown. Award full marks if $x = 3$ given and correct equation shown.
		If an incorrect equation shown and correct answer on FT given (with or without workings shown), award the final B0B1B1 marks.
13. <u>Alternative method</u> Sight of $7(x + 8 + 3)$ or equivalent AND Sight of $3(7 - 1 - x)$ or equivalent.	B1	Check diagram for answers. Brackets must be seen unless implied in later correct working.
7(x+8+3)-3(7-1-x)=89 or equivalent. 7x+77-18+3x=89 10x=30	B1 B1 B1	FT 'their expressions' provided of equivalent difficulty. Equating the difference of their two area expressions to 89. Correct expansion in an equation. FT only from $ax \pm b \pm cx \pm d = k$, provided working with area.
x = 3	B1	FT from any equation of the form $fx = g$. Accept an answer rounded, truncated, or as an improper fraction (if not whole number) on FT. Mark final answer.
		If the first B0 or B1 awarded, then award an additional SC2 for $x=3$ clearly identified as a final answer if no correct equation shown.
		Award full marks if $x = 3$ given and correct equation shown.
		If an incorrect equation shown and correct answer on FT given (with or without workings shown), award the final B0B1B1 marks.

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14. (LCM of 10 and 18 =) 90	B2	B1 for any other common multiple identified
or equivalent, e.g. $2 \times 3 \times 3 \times 5$ or $2 \times 9 \times 5$		e.g. 180, 270 etc.
(HCF of 30 and 72 =) 6 or equivalent, e.g. 2 × 3		B1 for any other common factor identified i.e. 2, 3, . Do not accept 1.
n = 15	B1	B2 B2 B0 for 90/6. FT only if at least one B2 gained. If at least one B2 awarded for correct products seen but incorrectly evaluated LCM or HCF, then B0 is awarded as the final mark. e.g. award B2 B2 B0 for $2 \times 3 \times 3 \times 5 = 90$ and $2 \times 3 = 5$, $n = 90/5 = 18$ award B1 B2 B0 for LCM = 180 and $2 \times 3 = 5$, $n = 180/5 = 36$.
		Accept an answer rounded, truncated, or as an improper fraction if n is not an integer.
		 If no marks awarded, award one of the following: SC2 for a final answer of ²/₃₆₀ or ¹/₁₈₀ equivalent (from reversing LCM and HCF) SC2 for a final answer of ⁶/₉₀ or ¹/₁₅ equivalent (answers reversed). SC1 for sight of LCM = 2 AND HCF = 360 (from reversing LCM and HCF).
		An unsupported 15 is awarded B2B2B1.
15.(a)		Numerator and denominator must be integers.
$\frac{5}{8}$ on 'Bus B' branch.	B1	Allow any equivalent to $\frac{5}{8}$ e.g. 0.625. Do not allow 0.63.
$\frac{1}{2}$ or $\frac{4}{8}$ or 0.5 on all 'seat branches'	B1	Allow any equivalent to $\frac{1}{2}$.
15.(b) $\frac{5}{8} \times \frac{1}{2}$ or equivalent	M1	FT 'their $\frac{5}{8}$ × 'their $\frac{1}{2}$ ' provided both values < 1.
$= \frac{5}{16} \text{ or } \frac{20}{64} \text{ or } \frac{25}{80} \text{ or equivalent ISW}$	A1	Do not allow rounded or truncated answers if decimal given. Numerator and denominator must be integers.
16.(a) 5.7×10^{-3}	B1	
16.(b) 4 × 10 ⁶	B2	Mark final answer. Award B1 for one of the following: • sight of 4 000 000 • equivalent correct value but not in standard form e.g. 0.4 x 10 ⁷ .

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17. (Average speed =) $\frac{x+36}{1+2}$ = 42 or equivalent. OR (Total distance =) $x + 36 = 3 \times 42$ or equivalent. ($x = 0.90$ ISW	M2 M2	Must be a complete and correct method for M2. Award M1 for sight of one of the following: • $\frac{x+36}{1+2}$ • $\frac{x+36}{3}$
		If no marks, award SC1 for a final answer of $x=48$ (from working with 2 hours).
18. Sight of $2x + 3y = 13$ AND $8x - 3y = 22$	B1	Award B1 for sight of $(2x + 3y) + (8x - 3y) = 13 + 22$. May be implied in later working.
Method to eliminate one variable e.g. (equal coefficients AND) appropriate intention to add or subtract or use a method of substitution.	M1	FT 'their equations' if of equivalent difficulty. If <u>equating coefficients</u> , allow one error in one term (not the term with equal coefficients). Sight of $10x = 35$ implies B1M1.
First variable found $x = 3.5$ or $y = 2$ or equivalent	A1	CAO. Award A1 for $2x = 7$.
Second variable found	A1	FT substitution of their '1st variable' if M1 gained. Accept an answer rounded, truncated or as an improper fraction (if not whole number) on FT, provided > 0.
(Perimeter of triangle = $3.5 + 3.5 + 2 =$) 9 (cm)	B1	FT 'their derived <i>x</i> and <i>y</i> ', provided an algebraic method is used and both > 0. If the first B0 or B1 awarded, then award an additional SC1 for one of the following: • sight of <i>x</i> = 3.5 AND <i>y</i> = 2 (if M0 awarded) • an unsupported answer of 9 (cm).