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

SUMMER 2024 MARKING SCHEME

Unit 1: Intermediate Tier	Mark	Comments
1.(a)(i) 81 000 ISW	B2	Accept $8{\cdot}1 \times 10^4$. 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 B1	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.g. -1, 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 27.
3. <u>Alternative Method</u> *(Sum =) 5 (1 + 2 + 3) – 3 × 1 or equivalent* *= 30 – 3* *= 27*	*M1* *M1* *A1*	*FT 'their 5 (1 + 2 + 3)' –'their 3 × 1'.*
4. (x = 180 –) 90 – 64 or equivalent = 26(°) (y =) 26(°) (z =) $\frac{180 - 26}{2}$ = 77(°)	 M1 A1 B1 M1 A1	Check diagram for answers but answer line takes precedence. FT y = 'their x'. FT 'their y', provided $y \neq 90°$ or 60°.

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5.(a) A correct explanation given. e.g. '(equal) groups do not reach 20', '12 to 15 and 16 to 19 so no 20', ' to reach 20 the groups are not equal' 'it only goes up to 19' '20 not included'.	E1	Allow any unambiguous explanation. Do not accept: 'because there's only 20 attempts'. 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) $\frac{17}{100}$ or equivalent ISW	B1	B0 for incorrect notation e.g. '17 in 100', '17 out of 100', '17:100' etc.
5.(c)(ii) A correct explanation given e.g. 'the eleven competitors might have all scored 20', 'only one of them (might have) scored 19', 'we don't know how many competitors scored 19' 'the probability of scoring 18, 19 or 20 is $\frac{11}{100}$' 'the 11 could include (the scores of) 18 and 20' 'it doesn't tell you the exact score of all 11 competitors'	E1	Allow any unambiguous explanation. E0 for mixing number of competitors and number of points scored. e.g. '11 points were scored for 18, 19, 20' '18, 19 or 20 people could have scored 11'.
6.(a) $\frac{96}{300}$ (× 100) or equivalent = 32(%)	M1 A1	M1 for sight of 0·32. 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 (£)6 AND (£)42 ISW	M1 A1	Sight of an appropriate 6 (or 42) implies M1. Allow in any order. Allow (£)6 : (£)42 or (£)42 : (£)6.
7.(a)(i) $7(2a-5)$	B1	Mark final answer. Allow: • $7\times(2a-5)$ • $-7(-2a+5)$ • $7(2a+-5)$ • $(2a-5)\times 7$ • $(2a-5)7$.
7.(a)(ii) $x(5+x)$	B1	Mark final answer. Allow: • $x(x+5)$ • $1x(5+x)$ • $(1)x\times(5+x)$ • $(5+x)x$ • $(5+x)\times x$.

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7.(b) $\frac{x}{3} = 4$ $x = 12$	B1 B1	 FT only from $\frac{x}{3} = k$, 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 $x \neq 12$.*

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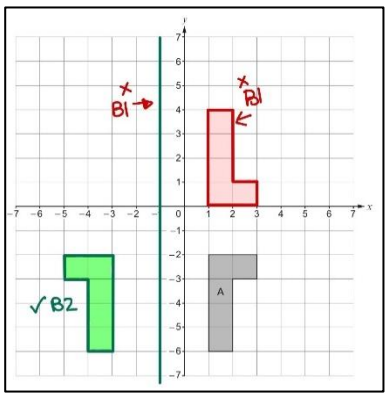
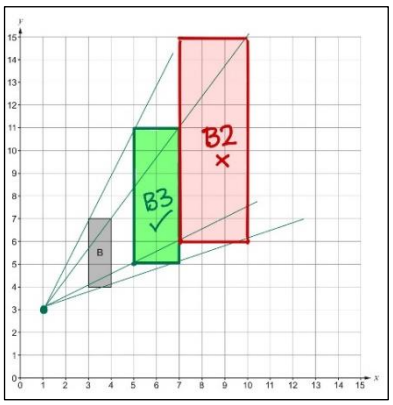
8. (Probability of winning score =) $\frac{3}{20}$ or equivalent	B2	Award B2 for sight of • $\frac{1}{4} \times \frac{3}{5}$ • '3 winners out of 20' • the 3 winning combinations/scores clearly identified in a list/table of the 20 possible combinations/scores. B2 may be implied in later workings. Award 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 + 2...with 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 + 3, 40 + 4, 40 + 5) with no extras • $\frac{3}{x}$ provided $x > 3$ and correct winning combinations/scores identified • $\frac{y}{20}$ provided with $y < 20$ • $\frac{3}{20}$ from incorrect winning combinations or scores identified • <u>strict FT</u> from 'their list' provided clearly stated $\frac{\text{'their number of winning scores'}}{\text{'their total number of possibles scores'}}$
(Number of winners =) $\frac{3}{20} \times 100$ or equivalent	M1	Award M1 for $\frac{1}{4} \times \frac{3}{5} \times 100$. May be implied e.g. 100 ÷ 20 = 5, 5 × 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 (£)85 – 15 × (£)4	M2	FT 'their number of winners', provided ≠ 3 and <100. Award M1 for one of the following: • 15 × (£)5 • an appropriate sight of (£)75 • 'their number of winners'× (£)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 × (£)1 – 3 × (£)5* *(£)5* *× 5* *=(£)25*	*M2* *A1* *m1* *A1*	*Method must be seen for M2.* *FT 'their 20' × (£)1 – 'their 3' × (£)5.* *May be implied in later working.* *FT 100 ÷ 'their 20'*
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.  	B3	**Overlay** 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	

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10.(b) $\frac{80}{40 \times 0.5}$ 4 $\frac{2}{0.5}$ 4 $\frac{80}{20}$ 4 $\frac{79}{40 \times 0.5}$ 3·95 or 4 or $3\frac{19}{20}$ $\frac{79}{20}$ 3·95 or 4 or $3\frac{19}{20}$ $\frac{79.3}{20}$ 3·965 or 3·97 or 4 $\frac{79.34}{20}$ 3·967 or 3·97 or 4	 M1 A1	May be seen in stages. Award M1 for appropriate calculation seen. Award A1 for the correct estimate for the calculation seen. An unsupported answer is M0A0.
10.(c) $4\frac{1}{2}$ or 4·5 or $\frac{9}{2}$	B3	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 + ½. 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 + ½ (or equivalent in its simplified form) evaluated provided ½ 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.

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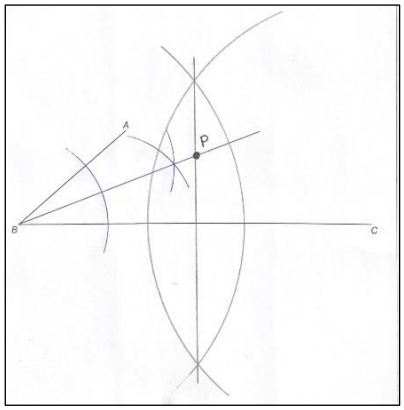
11. (Area of triangle *ABC* or area of cross-section =) $\frac{9 \times 10}{2}$	M1	
$= 45\ (cm^2)$	A1	May be seen in later working.
(Volume of prism =) 45×20	M1	FT 'their area of cross section'.
$= 900\ (cm^3)$	A1	CAO. An unsupported answer of 900 (cm^3) is awarded M1A1M1A1.
11. Alternative method *(Volume of prism =)* $\frac{9 \times 10 \times 20}{2}$	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: • show all their working • make few, if any, errors in spelling, punctuation and grammar • use correct mathematical form in their working • use appropriate terminology, units, etc
12. Correct construction of bisector of angle *ABC*	B1	Correct construction arcs (initial and secondary) and a line joining *B* 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 *P*, 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 $7(x + 8) + 3(x + 1) = 89$ or equivalent $7x + 56 + 3x + 3 = 89$ $10x = 30$ $x = 3$	 B1 B1 B1 B1 B1	Check diagram for answers. Brackets must be seen unless implied in later correct working. 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. 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.* *$7(x + 8 + 3) – 3(7 – 1 – x) = 89$ or equivalent.* *$7x + 77 – 18 + 3x = 89$* *$10x = 30$* *$x = 3$*	 *B1* *B1* *B1* *B1*	*Check diagram for answers.* *Brackets must be seen unless implied in later correct working.* *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.* *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 or equivalent, e.g. 2 × 3 × 3 × 5 or 2 × 9 × 5 (HCF of 30 and 72 =) 6 or equivalent, e.g. 2 × 3 n = 15	B2 B2 B1	B1 for any other common multiple identified e.g. 180, 270 etc. B1 for any other common factor identified i.e. 2, 3, . Do not accept 1. 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 × 3 × 3 × 5 = 90 and 2 × 3 = 5, n = 90/5 = 18 award B1 B2 B0 for LCM = 180 and 2 × 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 $\frac{2}{360}$ or $\frac{1}{180}$ equivalent (from reversing LCM and HCF) • SC2 for a final answer of $\frac{6}{90}$ or $\frac{1}{15}$ 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) $\frac{5}{8}$ on 'Bus B' branch. $\frac{1}{2}$ or $\frac{4}{8}$ or 0·5 on **all** 'seat branches'	 B1 B1	Numerator and denominator must be integers. Allow any equivalent to $\frac{5}{8}$ e.g. 0·625. Do not allow 0·63. Allow any equivalent to $\frac{1}{2}$.
15.(b) $\frac{5}{8} \times \frac{1}{2}$ or equivalent = $\frac{5}{16}$ or $\frac{20}{64}$ or $\frac{25}{80}$ or equivalent ISW	M1 A1	FT 'their $\frac{5}{8}$' × 'their $\frac{1}{2}$' provided both values < 1. Do not allow rounded or truncated answers if decimal given. Numerator and denominator must be integers.
16.(a) $5{\cdot}7 \times 10^{-3}$	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. $0{\cdot}4 \times 10^{7}$.

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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. $(x =)\ 90$ ISW	M2 A1	Must be a complete and correct method for M2. Award M1 for sight of one of the following: • $\frac{x+36}{1+2}$ • $\frac{x+36}{3}$ • $\frac{x+36}{180}$ (mins) • 3×42 • an appropriate 126. CAO. An unsupported answer of 90 is awarded M2A1. If no marks, award SC1 for a final answer of $x = 48$ (from working with 2 hours).
18. Sight of $2x + 3y = 13$ AND $8x - 3y = 22$ Method to eliminate one variable e.g. (equal coefficients **AND)** <u>appropriate intention to</u> add or subtract or use a method of substitution. First variable found $x = 3{\cdot}5$ or $y = 2$ or equivalent Second variable found (Perimeter of triangle = 3·5 + 3·5 + 2 =) 9 (cm)	B1 M1 A1 A1 B1	Award B1 for sight of $(2x + 3y) + (8x - 3y) = 13 + 22$. May be implied in later working. 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. CAO. Award A1 for $2x = 7$. 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. FT 'their derived x and y', 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 $x = 3{\cdot}5$ AND $y = 2$ (if M0 awarded) • an unsupported answer of 9 (cm).