



GCSE MARKING SCHEME

SUMMER 2025

**GCSE
MATHEMATICS
UNIT 1 – HIGHER TIER
3300U50-1**

About this marking scheme

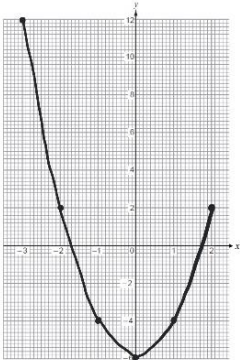
The purpose of this marking scheme is to provide teachers, learners, and other interested parties, with an understanding of the assessment criteria used to assess this specific assessment.

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 2025 MARK SCHEME

GCSE Mathematics Unit 1: Higher Tier	Mark	Comments
1.(a)		FT until 2 nd error.
$2x - 6 + x + 3 + 3x + 13 (= 100)$ or equivalent	B1	$(2x - 6 + x + 3 + 3x = 100 - 13)$ Step 1: a correct equation with the terms in 'x' or constants not collected. At this step, an 'error' is defined as one of the following: - omitting, subtracting, replacing one with another, or counting a region twice ($2x - 6$, $x + 3$, $3x$ or 13) - one incorrect term.
$6x + 10 = 100$ or equivalent	B1	$(6x - 3 = 87)$ Step 2: an equation in the form $ax + b = c$. At this step, an 'error' is defined as an error in either of the ax , b or c terms. Note: an appropriate sight of $2x + x + 3x = 90$ (or equivalent) is awarded B1 B1.
$6x = 90$ or better (e.g. $x = \frac{90}{6}$)	B1	Step 3: must be an equation in the form $ax = e$. At this step, an 'error' is defined as an error in either of the ax or e terms. Award B1 for the appropriate sight of $6x$ and 90 (or equivalent) but not in an equation.
$(x =) 15$	B1	Step 4: the answer Mark final answer. Allow a fraction from a FT value unless x is a whole number. Unsupported or embedded $(x =) 15$ gains all 4 marks. If 15 is seen, but then contradicted by $x \neq 15$, penalise -1 (3 marks). If no marks, award SC3 for appropriate sight of 24, 18, 45 (and 13) with no other trials or stopping at 24, 18, 45 (and 13) (with $x = 15$ not stated). If no marks, award SC2 for any appropriate sight of trialling including 24, 18, 45 (and 13) (but $x = 15$ not stated).

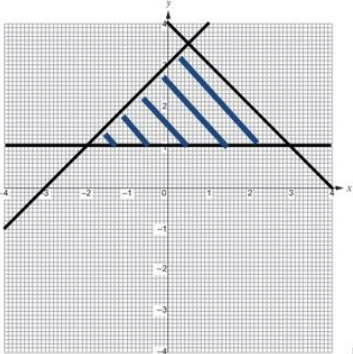
1.(b) $\frac{24}{100}$ or equivalent ISW	B2 FT 'their x' from (a) for B2, provided $3 \leq x \leq 53$ (need not be a whole number). However, do not allow decimal or negative number on numerator as final answer for B2 on FT. Award B1 for one of the following: • an appropriate sight of 24 • a correctly evaluated sight of $2 \times$ 'their x' – 6 (may be a decimal or negative number) • $\frac{2 \times 15 - 6}{100}$ not evaluated, or evaluated incorrectly • $\frac{2 \times \text{'their } x' - 6}{100}$ not evaluated or evaluated incorrectly • an appropriate sight of $\frac{2x - 6}{100}$ • $\frac{42}{100}$ or equivalent (Track) • $\frac{3 \times \text{'their } x' - 3}{100}$ correctly evaluated (Track) • a correct answer with incorrect notation e.g. '12 in 50'.
2.(a) 12 –4	B2 Answers in table take precedence. B1 for each.
2.(b) At least 4 correct plots <u>and no incorrect plot.</u> A smooth <u>curve</u> drawn through their 6 plots. 	P1 FT 'their $(-3, 12)$' and 'their $(1, -4)$' OR $(-3, 12)$ and $(1, -4)$ plotted (even when not shown in the table or contradicted). Allow $\pm \frac{1}{2}$ a small square'. Ignore any additional points plotted on the curve. C1 FT for one of the following: • 'their 6 plots' • a curve through the 4 given points AND $(-3, 12)$ and $(1, -4)$. Clear intention to draw a curve through 'their plotted points' (± 1 small square horizontally <u>or</u> vertically).
2.(c) –1.9 AND 1.9	B2 Answer line takes precedence. Strict FT intersection of 'their curve' with $y = 1$ only if exactly two points of intersection. May be seen in any order. Need not be to one decimal place. Allow $\pm$ '1 small square' i.e. ± 0.1. Award B1 for one of the following: • line $y = 1$ drawn (must be at least 5 small squares long) • one correct x-value for the intersection of 'their curve' with $y = 1$, only if exactly two points of intersection • two correct x-values for intersections of 'their curve' with 'their $y = 1$', provided not $y = 0$ and only if exactly two points of intersection.

3. (total share in lbs =) $44 \text{ (lb)} \div 5 \times (3 + 5)$ OR $(44 \div 5) \times 3$ or equivalent 70.4 (lb) (total share in kg =) $70.4 \text{ (lb)} \div 2.2$ or equivalent 32 (kg)	M1 A1 M1 A1	May be seen in stages. Award M1 for complete method. Note: 8.8×8 or $352 \div 5$ or $(44 \div 5) 26.4$ CAO. May be implied in later working. Allow $70.4 \times 0.45(45\dots)$ FT 'their 70.4'. FT for 'their 70.4' $\div 2.2$ correctly evaluated. Mark final answer. Unsupported 32 is awarded M1A1 M1A1.
3. <u>Alternative method</u> (larger share in kg =) $44 \div 2.2$ or (1 share in kg) = $44 \div 2.2 (\div 5)$ or equivalent (larger share in kg =) 20 (kg) or (1 share in kg) = 4 (kg) (total share =) $20 \text{ (kg)} \div 5 \times (3 + 5)$ OR $(20 \text{ (kg)} \div 5) \times 3$ OR $4 \text{ (kg)} \times (3 + 5)$ OR $(20 \text{ (kg)} \div 5) \times 4 \text{ (kg)} \times 3$ or equivalent 32 (kg)	M1 A1 M1 A1	May be seen in stages. Allow $44 \times 0.45(45\dots)$. CAO. May be implied in later working. Award M1 for complete method. FT 'their 20' or 'their 4' $\times (3 + 5)$ or 'their 4' $\times 3 + 20$. Note: 4×8 or $160 \div 5$ or $(20 \div 5) 12$. FT for 'their 20' (their larger share) or 'their 4' (their 1 share). Mark final answer. Unsupported 32 is awarded M1A1 M1A1.
Organisation and Communication. Accuracy of writing.	OC1 W1	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. 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.

4. 5×20 OR 3×22 or equivalent 100 AND 66 $(100 - 66 =)$ 34 14 and 20	M1 A1 B1 B1	Award M1 for exclusively finding five values with a sum of 100 OR three values with a sum of 66. May be seen or implied in later working. An exclusive appropriate sight of 100 AND 66 implies M1 A1 (do not award the M1 A1 for 100 and 66 seen along with other totals unless 100 and 66 used in further workings). May be seen or implied in later working. FT 'their 5×20' – 'their 3×22'. Mark final answer. FT to find two values with a difference of 6 for 'their 34', provided M1 previously awarded. Award B1 for sight of 14 and 20 along with three other values that total 66. Unsupported 14 and 20 is awarded M1 A1 B1 B1.
5.(a) –4	B1	Answer line takes precedence. Must be simplified, but allow $\frac{-4}{1}$. The correct gradient has to be unambiguously shown. $y = -4x + 2$ is B0, but $y = -4x + 2$ is B1.
5.(b) $y = -4x + 2$ or equivalent	B1	Mark final answer. FT 'their gradient' from (a) (need not be whole number).
5.(c) $y = -4x (\pm k, \text{ where } k \neq 2)$ or equivalent	B1	FT 'their gradient' from (a) OR 'their equation from (b)'.
6.(a) $n^2 + 3$ or equivalent	B2	Mark final answer. Accept $n^2 + 2 + 1$. Award B1 for one of the following: - appropriate sight of n^2 - evidence of working with n^2 (e.g. 1, 4, 9, 16, ... or $1 + 3, 4 + 3, 9 + 3, \dots$ or $1 \times 1 + 3, 2 \times 2 + 3, 3 \times 3 + 3, \dots$ but not 4, 7, 12, 19, ... alone). Do not allow B1 for only $5 \times 5 + 3$ seen.
6.(b) $(n =) 12$	B2	Award B2 for an embedded answer e.g. $12^2 + 3 = 147$ BUT only B1 if contradicted by $n \neq 12$. FT 'their $n^2 + 3 = 147$', provided of equivalent difficulty ($an^2 + b = c$ or equivalent, where $a, c \neq 0$ and n is a whole number of tiles). Unsupported 12 is awarded B2. Award B1 for any one of the following: $n^2 + 3 = 147$ or equivalent $\sqrt{144}$ 12×12 - attempting to add successive odd numbers to correctly identify 147 as a term in the sequence (e.g. $4 + 3 + 5 + 7 + 9, \dots, 23$) - continuing the sequence to correctly identify 147 as a term in the sequence (e.g. 4, 7, 12, 19, ... 147).

7. $5x + 7y = 88 \quad \text{AND} \quad 2x + 3y = 36$ Method to eliminate one variable e.g. equal coefficients <u>AND an appropriate intention to subtract or add (whichever is appropriate)</u> or use a method of substitution. First variable found (cherries) $x = 12$ or (grapes) $y = 4$ Substitute to find the 2nd variable. Second variable found. $(\text{Total cost} = \frac{1}{2} \times 12 + 6 \times 4 =) \quad (\text{£})30$	B1 M1 A1 m1 A1 A1	Ignore alternative notation (e.g. c and g), provided consistent. Answer line takes precedence. Must be in an algebraic form for B1. May be implied in later working. Must be in an algebraic form for M1. FT 'their equations' if both of equivalent difficulty (e.g. both the coefficients of x and y are $\neq 0$ and $\neq 1$). Allow one error in one term (not the term with equal coefficients). CAO for their equations. May be seen or implied in later working e.g. $\frac{1}{2} \times 12$ or 6×4). If FT leads to a whole number answer, it must be shown as a whole number. Otherwise, accept a fraction (e.g. not $y = 12/3$). FT substitution of their '1st variable' if M1 gained. If FT leads to a whole number answer, it must be shown as a whole number. Otherwise, accept a fraction. May be seen or implied in later working e.g. $\frac{1}{2} \times 12$ or 6×4). FT $\frac{1}{2} \times$ 'their x' + $6 \times$ 'their y', provided M1 awarded and provided 'their x' > 0 and 'their y' > 0. In addition to the first B0 or B1 being awarded, then award an additional SC2 for an appropriate sight of the total cost = (£)30 (from $x = 12$ AND $y = 4$). OR SC1 for the appropriate sight of both $x = 12$ AND $y = 4$.
8. 15.5×4 or $15 \times 4 + 4 \times 0.5$ or equivalent 62 (cm)	M1 A1	Allow $15 < \text{their } 15.5 \leq 16$. Award M1 for complete method or intention of complete method provided not contradicted. CAO. If no marks, award SC1 for an appropriate sight of 15.5.
9. $(x - 3)(x - 8)$ or equivalent	B2	Ignore attempts to solve $(x - 3)(x - 8) = 0$. Mark final attempt at factorisation. Award B1 for one of the following: $(x \dots 3)(x \dots 8)$ $(x + - 3)(x + - 8)$ - two brackets which multiply to give $x^2 - 11x + k$ - two brackets which multiply to give $x^2 + mx + 24$ $x(x - 8) - 3(x - 8)$ $x(x - 3) - 8(x - 3)$ - unambiguous $x - 3$ AND $x - 8$ with no other expressions.

10. (a)	$x = 79(^{\circ})$	B1	Answer space takes precedence. If no answer given on answer space, check diagram for 79° correctly placed .
10. (b)	$(y = 180 - 79 =) \quad 101(^{\circ})$ <u>Opposite angles</u> (of a) <u>cyclic quadrilateral</u> (add up to 180°)	B1 E1	Answer space takes precedence. If no answer given on answer space, check diagram for 101° correctly placed . FT $180 -$ 'their x from (a)', provided $x \neq 101$ or 90 . Although the words in brackets need not be seen, if additional words are added they must be correct e.g. <u>Opposite angles</u> of a <u>cyclic quadrilateral</u> are equal is awarded E0.
11. Appropriate sight of $18x^2 + 3x - 8x^2 + 10x$ or equivalent. Sight of denominator of $(4x - 5)(6x + 1)$ or equivalent in a <u>single fraction</u> . $\frac{10x^2+13x}{(4x-5)(6x+1)} \quad \text{or} \quad \frac{10x^2+13x}{24x^2-26x-5}$ $\text{or} \quad \frac{x(10x+13)}{(4x-5)(6x+1)} \quad \text{or} \quad \frac{x(10x+13)}{24x^2-26x-5}$	B2 B1 B1	Award B1 for sight of $3x(6x + 1) - 2x(4x - 5)$ or equivalent OR three of the four terms correct. Must be seen or stated as the denominator. FT from one incorrect term in numerator, provided quadratic, and of equivalent difficulty. Note that the numerator may be factorised as $x(10x + 13)$. Mark final answer.	
12. Missing angle(s) is/are 42° OR 63° or stated in later reasoning AND 'The triangles could be congruent' circled. Valid explanation e.g. • having equal angles alone is not a sufficient condition for congruence • the (corresponding) side lengths could be different / same (even though the angles are equal).	B1 E1	<u>Check diagrams</u> Working space takes precedence. If two angles are given, they must both be correct. Dependent on B1. Accept equivalent statements, e.g. • the triangles are similar (but not necessarily congruent) • if (a pair of corresponding) side lengths were known, we could apply ASA to test for congruency. Do not allow 'They have the same angles' (as need to mention sides). If angle(s) calculated, but no statement identified, award B1E1 for a full alternative explanation e.g. the triangles are similar <u>but not necessarily congruent</u> .	

13. Lines $y = x + 3$, $x + y = 4$ and $y = 1$ all correctly drawn. Correct region identified. 	B2 B1	B1 for any 2 correct lines. If $y = 1$ and $x = 1$ are both shown, do not award a mark unless $y = 1$ is selected for the region or clearly labelled. FT provided exactly three lines used and B1 awarded. Ignore other lines if not used. FT region may not be closed. Accept indication by 'shading out'.
14. $\frac{9}{4}\pi r^2 = 144\pi \quad \text{or} \quad \frac{9}{4}r^2 = 144 \quad \text{or} \quad r^2 + r \times \frac{5}{4}r = 144$ $\text{or} \quad 4\pi r^2 + 5\pi r^2 = 576\pi \quad \text{or better}$ $r = 8$	M2 A1	(Allow use of $\pi = 3.14$) M2 for setting up the equation AND one further correct step. M1 for sight of $\pi \times r \times \frac{5}{4}r$ (or equivalent). CAO.
15. (a)(i) $\frac{1}{2}$	B1	
15. (a)(ii) 32	B1	
15. (b) $x = 0.2151515\dots$ $100x = 21.51515\dots$ <u>with an attempt to subtract</u> $(330 \times) \frac{213}{990} \text{ or } (330 \times) \frac{71}{330}$ 71	M1 A1 A1	Or $10x$ and $1000x$, or equivalent. Or an alternative fully correct method. Allow $\frac{21.3}{99} (\times 330)$. CAO. Do not accept a final answer of $\frac{70290}{990}$ or $\frac{23430}{330}$.
15. (b) <u>Alternative method 1</u> $64.5454\dots + 6.4545\dots$ $70.9999\dots$ 71	M1 A1 A1	$\times 300$, $\times 30$ and adding recurring decimals.
15. (b) <u>Alternative method 2</u> $0.2 + 0.0151515\dots$ or $0.2 + 0.010101\dots + 0.0050505\dots$ $\frac{1}{5} + \frac{15}{990} \dots$ or $\frac{1}{5} + \frac{1}{99} + \frac{5}{990}$ $[330 \times (\frac{1}{5} + \frac{15}{990} \dots)] = 66 + 5 = 71$	M1 A1 A1	

18. (Volume scale factor =) $\left\{\sqrt{\frac{75}{3}}\right\}^3 \quad (= 5^3 = 125)$ (Volume of large solid =) $0.4 \times \left\{\sqrt{\frac{75}{3}}\right\}^3 \quad \text{or} \quad 0.4 \times 125 \quad \text{or equivalent}$ $= 50 \text{ (cm}^3\text{)}$	B2 M1 A1	Or equivalent. May be seen in parts. Accept a method based on ratios e.g. 1 : 5 (from 3 : 75 = 1 : 25 = 1 : 5²) then 1 : 5³. Award B1 for one of the following: - a linear scale factor $\sqrt{\frac{75}{3}} \quad (= 5)$ $\left\{\frac{75}{3}\right\}^3 \quad (= 25^3 = 15625).$ FT 'their derived volume scale factor', provided that it comes from $[\sqrt{\quad}]^3$. CAO.
18. <i>Alternative method (using reciprocal scale factor)</i> (Volume scale factor =) $\left\{\sqrt{\frac{3}{75}}\right\}^3 \quad (= \frac{1}{125})$ (Volume of large solid =) $0.4 \div \left\{\sqrt{\frac{3}{75}}\right\}^3 \quad \text{OR} \quad 0.4 \times 1 / \left\{\sqrt{\frac{3}{75}}\right\}^3 \quad \text{or equivalent}$ $= 50 \text{ (cm}^3\text{)}$	B2 M1 A1	Or equivalent. May be seen in parts. Accept a method based on ratios e.g. 1 : 5 (from 3 : 75 = 1 : 25 = 1 : 5²) then 1 : 5³. Award B1 for a linear scale factor $\sqrt{\frac{3}{75}} \quad (= \frac{1}{5})$ or award B1 for $\left\{\frac{3}{75}\right\}^3 \quad (= \left\{\frac{1}{25}\right\}^3 = \frac{1}{15625}).$ FT 'their derived volume scale factor', provided that it comes from $[\sqrt{\quad}]^3$. CAO.
19. $\left(\frac{\sqrt{250}}{(\sqrt{5})^3}\right) \sqrt{2}$ $((4 + \sqrt{2})(3 - \sqrt{2}) =) \quad 10 - \sqrt{2}$ 10 AND 'the answer is rational'	B2 B2 B1	B1 for one of the following: (numerator of) $5\sqrt{10}$ (denominator of) $5\sqrt{5}$ or $\sqrt{125}$ - appropriate manipulation of both numerator and denominator e.g. $\frac{\sqrt{2} \times \sqrt{125}}{\sqrt{125}}$ or $\frac{\sqrt{25} \times \sqrt{10}}{\sqrt{25} \times \sqrt{5}}$ or $\frac{\sqrt{5} \times \sqrt{5} \times \sqrt{10}}{\sqrt{5} \times \sqrt{5} \times \sqrt{5}}$ or better. Seen or implied. If not B2, award B1 for 3 or 4 correct terms within $12 - 4\sqrt{2} + 3\sqrt{2} - 2$ or $12 - 4\sqrt{2} + 3\sqrt{2} - \sqrt{4}$ (without subsequent correct collection of terms). Mark final answer. FT for equivalent difficulty, requiring: - correct <u>collection</u> from at least three terms, at least one of which must be a surd) - AND - at least B2B0 or B0B2 or B1B1 awarded. FT for an irrational answer, provided it is in the form $a + b\sqrt{2}$.

20. (a) $[P(7,5,6) =] \frac{1}{6} \times \frac{4}{5} \times \frac{1}{4}$ or equivalent $= \frac{4}{120} (= \frac{1}{30})$ or equivalent	M1 A1	ISW (for incorrect cancelling or conversion). No marks for working with replacement.
20. (b) $[P(5,5,5) =] \frac{4}{6} \times \frac{3}{5} \times \frac{2}{4}$ or equivalent $= \frac{24}{120} (= \frac{1}{5})$ or equivalent	M1 A1	FT their denominator from (a), provided it is derived from the product of 3 consecutive integers or it is 216. ISW (for incorrect cancelling or conversion). If no marks, award SC1 for an answer of $(\frac{64}{216} + \frac{1}{216} + \frac{1}{216} =) \frac{66}{216} (= \frac{11}{36})$ from working with replacement.
20. (c) $[P(5,5,7 \text{ or } 5,7,5 \text{ or } 7,5,5) \text{ or } 3 \times P(5,5,7) =]$ $\frac{4}{6} \times \frac{3}{5} \times \frac{1}{4} \times 3$ or equivalent $= \frac{36}{120} (= \frac{3}{10})$ or equivalent	M2 A1	FT their denominator from (a), provided it is derived from the product of 3 consecutive integers or it is 216. Award M1 for: $\frac{4}{6} \times \frac{3}{5} \times \frac{1}{4} (= \frac{1}{10})$ or equivalent. $\frac{a}{6} \times \frac{b}{5} \times \frac{c}{4} \times 3$, provided 2 of a, b, c correct. CAO. ISW (for incorrect cancelling or conversion). If no marks, and if working with replacement: award SC2 for one of the following answers $[3 \times P(5,5,7) + 3 \times P(6,6,5) =] \frac{60}{216} (= \frac{5}{18})$ $[3 \times P(5,5,7) =] \frac{48}{216} (= \frac{2}{9})$ $[3 \times P(6,6,5) =] \frac{12}{216} (= \frac{1}{18})$ OR award SC1 for one of the following answers $[P(5,5,7) + P(6,6,5) =] \frac{20}{216} (= \frac{5}{54})$ $[P(5,5,7) =] \frac{16}{216} (= \frac{2}{27})$ $[P(6,6,5) =] \frac{4}{216} (= \frac{1}{54})$.