GCSE MARKING SCHEME

AUTUMN 2023

GCSE
MATHEMATICS
UNIT 2 – FOUNDATION TIER
3300U20-1

INTRODUCTION

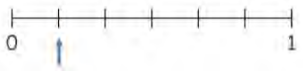
This marking scheme was used by WJEC for the 2023 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

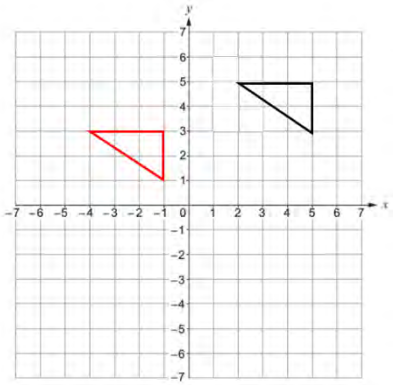
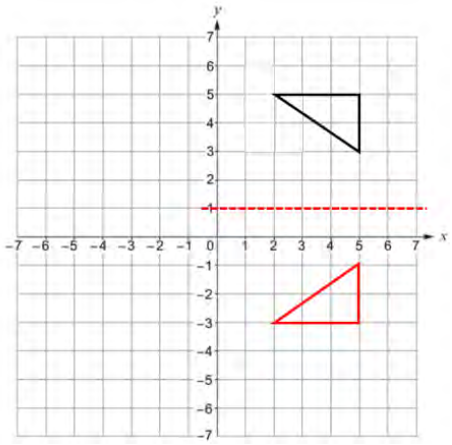
WJEC GCSE MATHEMATICS

AUTUMN 2023 MARKING SCHEME

GCSE Mathematics **Unit 2: Foundation Tier**	**Mark**	**Comments**
1.(a) 161	B1	
1.(b) 1944	B1	
2.(a) radius	B1	
2.(b) tangent	B1	
3.(a) 	B1	Accept other unambiguous indication.
3.(b) 	B1	Accept other unambiguous indication.
4.(a)(i) 85°	B1	
4.(a)(ii) 95°	B1	
4.(b) Unambiguous parallel line, drawn through the point C.	B1	Mark intention.
5.(a) 3	B1	
5. (b) 4	B2	B1 for 1 2 3 4 8 8 9 (ascending or descending list)
5.(c) (Missing value =) 5 × 3 – (7 + 2) (Missing value = 15 – 9 =) 6	M2 A1	Award M2 for sight of unambiguous 15 – 9 Award M1 for sight of (Total of all 3 values =) 5 × 3 or unambiguous '15' CAO
5.(c) Alternative method (trial and improvement) *A trial of any value* *An improved trial* *6*	 *M1* *m1* *A1*	 *'Their value' + 7 + 2 evaluated correctly* *3* *An improved trial means that their choice of value takes them in the right direction.* *May be seen as an embedded answer, unless contradicted. If contradicted award M1 m1 A0. Award M1 m1 A1 for a correct answer of 6.*

6. (One more column/layer needed = 4 × 3 =) 12 (cubes)	B1	
(One more layer/column needed = 4 × 4 =) 16 (cubes)	B1	May be seen as 12 + 4
(Additional cubes needed = 12 + 16 =) 28	B1	FT 'their column' and 'their layer' provided B1 previously awarded and answer > 24.
6. Alternative method *(Number of cubes in Dylan's cuboid = 4 × 3 × 3 =) 36* *(Number of cubes in Angharad's cube = 4 × 4 × 4 =) 64* *(Additional cubes needed = 64 – 36 =) 28*	*B1* *B1* *B1*	*Accept 'Volume' for 'Number of cubes'* *May be seen as 12 × 3 or 9 × 4* *FT 'their number of cubes in Dylan's shape' and 'their number of cubes in Angharad's shape' provided B1 previously awarded and neither shape has volume of 1 (cm³).* *If no marks, award SC1 for sight of a correct volume calculation/value.*
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
7. 27 × 60 (+ 11) (=) 1631 (seconds)	M1 A1	Sight of 1620
8.(a) 7000	B2	B1 for sight of 7200.
8.(b) 0·04 × (£)250 or equivalent (£) 10 ISW	M1 A1	
8.(c) 14 × 5 or equivalent (= 70) 70 ÷ 2 or equivalent = 35	M1 m1 A1	 FT 'their 14 × 5' ÷ 2 CAO
8.(c) Alternative method 1 *1/5 = 20% AND 10% = 7* *7 × 5* *= 35*	*B1* *M1* *A1*	 *FT 'their 7' provided 1/5 has been considered along with 50(%)* *CAO*
8(c) Alternative method 2 *14 × 2·5* *= 35*	*M2* *A1*	*May be seen in stages.* *e.g. 14 + 14 + 0·5 × 14* *CAO*
9.(a) $x + 5$ or $5 + x$	B1	Mark final answer.
9.(b) $3 - x$ or $-x + 3$	B1	Mark final answer.
9.(c) $\frac{x}{2}$ or $\frac{1}{2}x$ or $0{\cdot}5x$	B1	Allow $x \div 2$

10. (a) 3·5 pints	B1	
10.(b) 20 miles	B1	
11.(a) 55% or 0·55 or $\frac{55}{100}$ or $\frac{11}{20}$ or equivalent	B1	Allow 55. Do not accept 0·55%.
11.(b) $\frac{1}{2}$	B1	
12.(a) $8a = 27{\cdot}5 - 3{\cdot}5$ or $8a = 24$ $a = 3$	B1 B1	Mark final answer. FT from $8a = k$. Unsupported correct answer implies B1B1. Award B1B0 for a final answer of $24 \div 8$ or $\frac{24}{8}$. If FT leads to a whole number answer, it must be shown as a whole number. Otherwise, accept a fraction or a decimal, either rounded or truncated. Allow B1B1 for a correct embedded answer BUT only B1B0 if contradicted by $a \neq 3$ or equivalent.
12.(b) –22·5 or $-\frac{45}{2}$ or equivalent ISW	B1	
13. 9·2	B2	Answer line takes precedence. Award B2 for all three clues satisfied. Award B1 for one of the following on the answer line: • 6·9 • 11·5 • 84·64 • $9{\cdot}2^2$ Award B2 if answer line is blank but a **final** answer of 9·2 is clearly embedded (e.g. $9{\cdot}2^2$) in the working space. Award B1 if a final answer of 9·2 is contradicted on the answer line (e.g. $9{\cdot}2^2 = 84{\cdot}64$ in working space, but 84·64 is written on the answer line).
14.(a) 120	B2	**120 must come from correct working.** Unsupported 120 is awarded B2. Award B1 for one of the following: • sight of 117(·0631…) rounded or truncated. • an answer of 120 from 117·…
14.(b) 141·2	B2	**141·2 must come from correct working.** Unsupported 141·2 is awarded B2. Award B1 for one of the following: • 141(·183…) rounded or truncated • $\frac{74\sqrt{91}}{5}$ • an answer of 141·2 correctly rounded from 141·1….. or 141·2…..

15. (Hours worked on Friday =) 4·5 (hours)	B2	Answer space takes precedence. Mark final answer. Accept 4½ (hours). Award B1 for sight of one of the following: • Correct time given but not in hours (e.g 4 hours 30 mins, 270 minutes) • 9 (hours for M,T,W) from correct working • method to arrive at hours for full day (e.g. $4x = 36$) • method to arrive at hours for half day (e.g. $8y = 36$) • 4·5 seen but then incorrect workings seen (e.g 4 hours 50 minutes, 4 hours 30).
16. (a) Correct translation 	B1	
16. (b) Correct reflection in $y = 1$. 	B2	Award B1 for one of the following: • correct reflection in $x = 1$ • sight of the line $y = 1$ unambiguously indicated.

17. (Length of A = 35 cm ÷ 5 × 2 =) 14 (cm) (Total length of B and C = 35 – 14 =) 21 (cm) (Length of B =) 21 ÷ (1 + 6) **OR** (Length of C =) 21 ÷ (1 + 6) × 6 (Length of B =) 3 (cm) **AND** (Length of C =) 18 (cm)	 B1 B1 M1 A1	Check diagram for answers. Not from incorrect working. FT 35 – 'their 14'. Not from incorrect working. **Strict FT** 'their 21' (including 35 and 14) ÷ 7 Sight of 3 or 18 implies M. FT 'their 21' ÷ 7 × 6. Penalise -1 only once if their A, B or C labelled incorrectly.
17. Alternative method *(Total length of B and C = 35 cm ÷ 5 × 3 =) 21 (cm)* *(Length of A = 35 – 21 =) 14 (cm)* *(Length of B =) 21 ÷ (1 + 6) **OR*** *(Length of C =) 21 ÷ (1 + 6) × 6* *(Length of B =) 3 (cm) **AND*** *(Length of C =) 18 (cm)*	 *B1* *B1* *M1* *A1*	*Check diagram for answers.* Not from incorrect working. Not from incorrect working. *FT 35 – 'their 21'* ***Strict FT** 'their 14' (including 35 and 14) ÷ 7* *Sight of 3 or 18 implies M1* *FT 'their 21' ÷ 7 × 6.* Penalise -1 only once if their A, B or C labelled incorrectly.
18. (a) $x = 2$ drawn	P1	Award P0 if other lines are drawn unless $x = 2$ is unambiguously indicated. Ignore the line $y = 8$ drawn from (0,8) to the given line. Their line must be drawn must at least 5 small squares in length.
18. (b) (2 , 8)	B1	FT correct intersection of 'their drawn straight line $x = 2$' and the given line.
19.  10% £92(.00) 36 × 0·135 or equivalent £4.86	 B1 B1 M1 A1	Numbers shown in the boxes take precedence. If answer boxes are left blank allow unambiguous indication of their three answers. FT 9.2 ÷ 'their 0·1' (i.e. 'their 10%'). Allow 36 × $\frac{13{\cdot}5}{100}$ or equivalent for M1.

20. (Radius of smaller circle =) 4 (cm) **AND** (Radius of larger circle = 4 + 2 =) 6 (cm)	 B1	Check diagram for answers. May be seen or implied in later working.
(Width of rectangle = 8 + 2 + 2 or 6 + 6 =) 12 (cm) **AND** (Length of rectangle = 8 + 2 + 2 + 8 or 6 + 6 + 8 =) 20 (cm)	B1	May be seen or implied in later working. Implies previous B1. FT 2 × 'their 6'. FT 8 + 2 × 'their 6'.
(Shaded area =) $20 \times 12 - \pi \times 4^2 - \pi \times 6^2$ or $(12 \times 12) - \pi \times 6^2 + (12 \times 8) - \pi \times 4^2$	M2	FT 'their 12(cm)' and 'their 20(cm)' for a possible M2 and possible A1. FT 'their 4(cm)' and 'their 6(cm)' for a possible M2 A0. If a 12 × 12 square and 12 × 8 rectangle used, the previous B1 is implied. Award M1A0 for sight of any of the following (FT 'their 12(cm)', 'their 20(cm)', 'their 4(cm)' and 'their 6(cm)'): • (Area of the smaller circle =) $\pi \times 4^2$(= 50·265...cm^2) • (Area of the larger circle =) $\pi \times 6^2$(= 113·097.. cm^2) • (Shaded area =) $20 \times 12 - \pi \times x^2 - \pi \times y^2$
Accept answers in the range 76·6 to 76·72 (cm^2) or $240 - 52\pi$ (cm^2)	A1	Allow 77 (cm^2) from correct working.