GCSE MARKING SCHEME

SUMMER 2022

**GCSE
MATHEMATICS
UNIT 2 – FOUNDATION TIER
3300U20-1**

INTRODUCTION

This marking scheme was used by WJEC for the 2022 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.
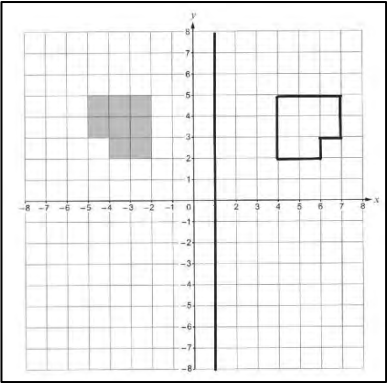
WJEC GCSE MATHEMATICS

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Unit 2 Foundation Tier	Mark	Comments
1.(a) 65 011	B1	
1.(b) five million six thousand four hundred and three	B1	
2.　　　(>) 　　　　< 　　　　= 　　　　<	B2	B1 for 2 correct.
3.(a)(i) Kite	B1	
3.(a)(ii) Parallelogram	B1	
3.(b) Sphere	B1	
4.(a) 48, 96, 144, 192	B1	Condone inclusion of 240 if 48 is omitted.
4.(b) 3	B1	
4.(c) 39	B1	
5.(a) 16 and 25	B2	Answer space takes precedence. Accept 4^2 and 5^2. B1 for writing • two numbers with a difference of 9, one of which is square, or • two different square numbers in their answer space, or • listing at least three square numbers in their workings. If no marks, award SC1 for an unsupported answer of 4 and 5.
5.(b) No, AND correct reason stated e.g. • (two odd numbers) add to give an even number (and 37 is odd). • only an even and an odd number can add to make 37. • only an even and an odd number can add to make an odd number.	E1	E0 if incorrect box is ticked, even if the correct reason is given. If none of the boxes are ticked, 'no' may be implied by their reason. Accept equivalent reasons. Accept the use of 'make' or 'and' instead of 'add'. Allow 'there are no two odd numbers which add to make 37' or 'the answer will always be even'. Exemplifying two odd numbers adding to an even number by itself is insufficient.
6.(a)　　　　　　　　　　　　circumference	B1	
6.(b)　　　　　　270°	B1	
6.(c) (Smaller angle =) 75(°) 　　　　　(Larger angle =) 105(°)	B2	B1 for two angles which add to 180°, provided neither angle is 90° or 0°.
7.(a) Subtract fourteen (from the previous term)	B1	Accept 'take away fourteen', 'goes down in fourteens' and '-14'. B0 for 14 alone or 'there is 14 between each number'.
7.(b) 736	B1	
7.(c) n – 4 (grapes)	B1	Mark final answer
8.　　　　　　　0.7　　　　70(%) 　　　$\frac{1}{20}$　　　　0.05	B4	B1 for each correct response.
9. 9.65　　ISW	B1	Allow $\frac{193}{20}$ or $9\frac{13}{20}$ B0 for 193 ÷ 20.
10. 303	B2	Mark final answer. B1 for sight of 245 or 58 (but not 245x or 58y) OR B1 for an unsupported final answer of 303x, or similar.

11. (Smallest number = $\frac{3}{5}$ × 200 = 120) (Largest number = 120 + 4 = 124) The three numbers are) 120, 122, 124	B3	Award B2 for a final answer of <u>three</u> numbers which satisfies the following conditions: • the three numbers are different • the three numbers are even • the range of the three numbers is 4 • the smallest number is greater than or equal to 40. Award B1 for sight of 120 or a final answer of three different numbers with a range of 4.
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. (a) (1, 0)	B2	Award B1 for one of the following: • if *C* clearly identified on grid but coordinates not given or are incorrect • for an answer of (4, 3) (midpoint of *AB*) • for an answer of ($1x$, $0y$) and point not identified.
12. (b) (-1, 6) OR (-2,7) 	B2	Award B2 for any point that satisfies the conditions e.g. (-1.5, 6.5) Award B1 for one of the following: • if *D* identified on grid in a correct position but coordinates not given or are incorrect OR • for the coordinates of any point that creates a right-angled triangle with AB as one side e.g. (0,5) (1,4) (2,3) (4,1) (5,0) (6,-1) (7,-2) (3,4) (5,2) (2,7) (3,6) (4,5) (6,3) (7,2)

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13.			**Answer lines take precedence**
2·73 (pints) ÷ 1·75 or 2·73 (pints) × 4/7		M1	Allow use of 568ml or 570ml ≈ 1 pint leading to an answer
1·56 (litres)		A1	of 1·55 or 1·56
1·615(0) (litres)		B1	
1·25 + 1·56 + 1·615		M1	(= 4·425) FT 1·25 + 'their 1·56' + 'their 1·615' Award M1 for 1·25 + 2·73 + 1615
÷ 3		m1	
1·475 (litres) or 1·47 (litres) or 1·48 (litres)		A1	Allow 1·5 (litres) from correct working. Note: An answer of (1618.98/3 =) 539·66 or 540 or 539·6 or 539·7 implies M1m1A1.

14. (a)			
		B1	All six entries correct.

14. (b) Valid explanation given e.g. "odd × even = even" "because it's odd times even" "even times any whole number is always even"	E1	Do not accept "because all the numbers on the square spinner are even" Allow "as they are multiplied by even numbers which make even numbers" "because it's multiplied with an even number"

14. (c)	$\dfrac{7}{12}$ ISW	B2	FT 'their fully completed table'. Award B2 for unsupported 58·3(333…)%. Penalise −1 for <u>only</u> words (7 out of 12) or <u>only</u> ratio (7:12). B1 for $x/12$ if $x < 12$. B1 for $7/y$ if $y > 7$ (FT 'their 7'). B1 for unsupported 58%.

14. (d) (Amount taken = 228 × £2.50 =) (£)570	B1	
(Expected number of winners = 7/12 × 228) 133 (winners)	B1	If 7/12 or correct % or decimal seen in part (c), it must be used for this B1. FT 228 × 'their 7/12' provided less than 1 Allow 133/228 or '133 out of 228'. Must be whole number. Award B0 for 7/12 × 228 = 0·58(333…) × 228 = 132 winners. Award B0 for 7/12 × 228 = 0·6 × 228 = 136 or 137 winners.
(Expected prize money = 133 × £3.50 =) (£)465.5(0)	B1	FT £3.50 ×'their 133' (provided < 228).
(Expected profit = 228 × £2.50 − 133 × £3.50 =) (£)104.5(0)	B1	(£)570 − (£)465.5(0) FT 'their (£)570' − 'their (£)465.5(0)' Award B1B1B1B0 for sight of 228 × £2.50 − 133 × £3.50 with an incorrect final answer. If the FT results in a loss, the 'Loss' must be stated, or the answer left as a negative.

14. (d)	Alternative Method 1		
	(Expected number of winners = 7/12 × 228) 133 (winners)	B1	If 7/12 or correct % or decimal seen in part (c), it must be used for this B1. FT 'their 7/12' if less than 1 × 228 Allow 133/228 or '133 out of 228' Must be whole number Award B0 for 7/12 × 228 = 0·58(333…) × 228 = 132 winners. Award B0 for 7/12 × 228 = 0·6 × 228 = 136 or 137 winners.
	(Expected number that don't win = 228 – 133) 95 (non-winners)	B1	FT 228 – 'their 133' (provided < 228)
	(Amount taken = 95 × £2.50 =) (£)237.5(0)	B1	FT £2.50 × 'their 95' provided < 133
	(Expected profit = 95 × £2.50 – 133 × £1 =) (£)104.5(0)	B1	(£)237.5(0) – (£)133 FT 'their (£)237.5(0)' – 'their (£)133' Award B1B1B1B0 for sight of 95 × £2.50 – 133 × £1 with an incorrect final answer. If the FT results in a loss, the 'Loss' must be stated, or the answer left as a negative.
14. (d)	Alternative Method 2 Working with 12 players (Amount taken = 12 × £2.50 =) (£)30(.00)	B1	
	(Expected prize money = 7 × £3.50 =) (£)24.5(0)	B1	FT 'their 7' (provided < 12)
	(Expected profit for 12 players = (£)30(.00) - (£)24.5(0) =) (£)5.5(0)	B1	FT 'their (£)30(.00)' – 'their (£)24.5(0)'
	(Expected profit for 228 players = 228/12 × (£)5.5(0) =) (£)104.5(0)	B1	FT 19 × 'their (£)5.5(0)' If the FT results in a loss, the 'Loss' must be stated, or the answer left as a negative.

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15.			**Answer lines take precedence**
length = 2 × width		B1	Note: correct answer 5·47… (cm) ≤ width ≤ 6·66…. (cm) Must be in the correct order for B1.
Area = width × length		M1	M1 for **using** the correct method (not for stating the formula). FT 'their width' × 'their length'
Area correctly evaluated AND > 60 (cm^2)		A1	
Perimeter = 2 × (width + length) or equivalent		M1	M1 for **using** the correct method (not for stating the formula) FT 2 × ('their width' + 'their length')
Perimeter correctly evaluated AND < 40 (cm)		A1	If answer space is left blank: • award full marks if correct length, width, area and perimeter clearly identified in working space or • penalise -1 if correct length, width, area and perimeter not clearly identified in working space. Penalise -1 if area and perimeter are reversed on the answer line but correct area and perimeter clearly identified in working space. Note: (W and L need not be whole numbers)

W	L	Area	Perimeter
6	12	72	36

16.	Correct reflection in x = 1.	B2	B1 for correct reflection in y = 1 OR B1 for sight of line x = 1 (must be unambiguous)

17.			
Use of 129·5 / time		M1	Allow M1 even for e.g. 129·5/3 hours 30 mins or 129·5/3·3(0) or 129·5/210
129·5 ÷ 3·5 or equivalent		M1	Must be a complete and correct method e.g. 129·5/210 × 60
37 (miles per hour)		A1	CAO Award M1M0A0 for sight of unsupported 0·61(6666….) (use of 129·5/210) OR 39·24(2424…) (use of 129·5/3·3).