GCSE MARKING SCHEME

AUTUMN 2021

GCSE
MATHEMATICS – NUMERACY
UNIT 2 – FOUNDATION TIER
3310U20-1

INTRODUCTION

This marking scheme was used by WJEC for the 2021 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 – NUMERACY

AUTUMN 2021 MARK SCHEME

Unit 2: Foundation Tier	Mark	Comments
1.(a) Three million, three hundred (and) fifty one thousand	B1	
1.(b) 32 (years old)	B1	Answer space takes precedence
1.(c) 83 (hours) 19 (minutes) (0)4 (seconds)	B2	B1 for 83 (hours) AND 19 (minutes) OR B1 for 83 (hours) AND (0)4 (seconds) OR B1 for 83 (hours) 18 (minutes) 64 (seconds) seen B1 for 83 (hours) 15 (minutes) 22 (seconds) (from subtracting)
1.(d) likely	B1	
1.(e) Two lines drawn within the tolerance	B2	B1 for one correct angle drawn within tolerance OR for sight of 360(°) ÷ 3 or 120(°) Use OVERLAY for top two angles If B2 not awarded, check using ANGLE MEASURER for bottom angle, for a possible B1 or B2
2.(a) *Ystwyth* 600 (points) AND *Taf* 300 (points)	B3	B2 for *Ystwyth* 600 or *Taf* 300 OR B2 for *Ystwyth* 300 AND *Taf* 600 B2 for 2 numbers that add to 900 B1 for sight of 1970 – 1070 or 900
2.(b) Any two suitable reasons e.g. “Conway should be 10” “Conwy bar height not correct” “Taf has 1 bar, others have 2” “Different width bars” “scale not correct” “No gap between bars” “vertical label missing” “no title”	E2	E1 for each reason Allow “(The scale) should go up in 10s…..or 5s” “The numbers jump from 10 to 30” “The bars are too close together” “The numbers aren’t going up in the right order” Do not accept “They are not spaced out “They are not in order”

3.(a)(i) 330×250 82 500 mm^2	M1 A1 U1	Award M1 for 33×25 OR $0{\cdot}33 \times 0{\cdot}25$ Mark final answer If change of units (cm or m), then method must match answer (825 or 0·0825) e.g. $330 \times 250 = 825$ is awarded M1A0U0 but, if correct units included e.g. $330 \times 250 = 825\ cm^2$ M1A1U1 can be awarded. FT correct unit for their calculation. Unsupported incorrect answers are awarded U1 for mm^2 only
3.(a)(ii) (a =) 36(·0 cm) (cm) AND (b =) 26·9	B3	B2 for • a = 360 (mm) AND b = 269 (mm) • a = 26·9 (cm) AND b = 36(·0 cm) • a = 36(·0 cm) • b = 26·9 (cm) • 330 + 15 + 15 AND 250 + 15 + 4 • 33 + 1·5 + 1·5 AND 25 + 1·5 + 0·4 Otherwise B1 for sight of • 269 OR 26·9 • 360 OR 36(·0) • 330 + 15 + 15 OR 250 + 15 + 4 • 33 + 1·5 + 1·5 OR 25 + 1·5 + 0·4 If no marks awarded, SC1 for sight of 34·5 or 25·4 or 26·5 (one length omitted)
3.(b) 23 × 15·5 + 237.6(0) (£) 594.1(0)	M2 A1	Allow M1 for substitution of their attempt at 15 hours 30 minutes e.g. 23 × 15·3 + 237.6(0) 23 × 930 + 237.6(0) Allow FT from 15·3 but not 930 i.e. award M1A1 for 23 × 15·3 + 237.6(0) = (£)589.5(0) If no marks award SC1 for • an answer of (£)356.5(0) (from 23 × 15·5) • an answer of (£)582.6(0) (from 23 × 15 + 237.6(0))

4.(a)(i) (Plan A discounted joining fee =) (£)135 × 0.85 or (£)135 – 0.15 × (£)135	M2	Or equivalent ((£)135 – (£)20.25) M2 for complete method Award M2 for sight of (£)114.75 Award M1 for sight of 0.15 × (£)135 or (£)20.25 May be seen/implied in further working
(Plan A =) 12 × (£)31.99 + (£)114.75	M1	(£)383.88 + (£)114.75 (= (£)498.63) FT 'their (£)114.75' Allow 12 × (£)31.99 + (£)135 (=(£)518.88) or 12 × (£)31.99 + (£)20.25 (=(£)404.13) for M1

(£)498.63 AND (Cheaper offer =) B	A2	Accept (£)499(.00)
		Award A1 for (£)498.63 or (£)499(.00)
		Award A1 for total cost incorrectly calculated or rounded incorrectly with correct conclusion
		FT their calculations for A2 or A1, provided at least M1 awarded
		e.g.
		(£)518.88 if (£)135 used (M1A1) and B selected (M1A2) or
		(£)404.13 if (£)20.25 used (M1M1A1) and A selected (M1M1A2).
		Must be unambiguous indication.
		
		Note:
		If (£)518.88 × 0.85 = (£)441.04(8) or equivalent is calculated (15% discount off total), then award M1M1A1 or A2 if correct conclusion A selected.
		
		If (£)518.88 × 0.15 = (£)77.83(2) or equivalent is calculated (15% discount of total), then award M0M1A1 or A2 if correct conclusion A selected.
		
		If (£)518.88 calculated for Plan A and (£)408 calculated for Plan B (15% off Plan B) then award M1M1A1 or A2 if correct conclusion B selected.

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 explanations and working in a way that is clear and logical • write a conclusion that draws together their results and explains what their answer means
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.

4.(a)(ii) Suitable **disadvantage** given relevant to the question e.g. "she may not have £480 to pay in one go" "a lot to pay in one go" "easier to pay in instalments" "only a bit cheaper so might as well go for the monthly instalments" "a lot of money if you give up/don't like it" "the monthly payment could go up"	E1	FT provided a suitable explanation Allow "the (monthly) price can go up"
4.(b) 		DAY	TIME	ACTIVITY
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1	Monday	6 p.m.	AQUA AEROBICS
2	Tuesday	8 p.m.	RUNNING CLUB
3	Wednesday	6 a.m.	SPIN
4	Friday	8 p.m.	STEP		B3	Table takes precedence. B2 for 2 or 3 correct rows or for the 4 classes unambiguously indicated on the timetable. B1 for 1 correct row or for 3 classes unambiguously indicated on the timetable. Could be any order. Penalise -1 once only if up to one entry missing on every row.
5.(a) Number of units 620 Charge for units 620 × (0.)18 (£) 111.6(0) (Standing charge) (£ 18) Total charges (£) 129.6(0) VAT at 5% (£) 6.48 Amount to pay (£) 136.08	B1 M1 A1 B1 B1 B1	 FT 'their 620', including if not a whole number Award for sight of digits 1116(0) Must be in pounds FT 'their 111.6(0)' + 18 correctly evaluated FT 5% of 'their 129.6(0)' correctly evaluated, allow rounded or truncated Allow for sight of (£) 136.08 in this box as implying (£) 6.48 FT provided at least one of the two previous B1 marks has been awarded

5.(b)		**If an evaluation is given with incorrect units, penalise A mark -1 on the first occasion then FT**
5.(b) Water interest 0.02 × 234 **AND** Gas interest 0.023 × 120 **AND** Loan interest 0.11 × 45 Water (£) 4.68 Gas (£) 2.76 Loan (£) 4.95 Total interest (£) 12.39	M2 A2 A1	Or equivalents M1 for any 1 or 2 correct methods A1 for any 1 or 2 correct evaluations Mark final answer, unless clearly stated as total interest FT for the sum of 3 amounts provided 2 of the amounts are correct
5.(b) Alternative method: *Water payment 1.02 × 234* ***AND*** *Gas payment 1.023 × 120* ***AND*** *Loan payment 1.11 × 45* *Water (£) 238.68* *Gas (£) 122.76* *Loan (£) 49.95* *Total interest (£238.68 + £122.76 + £49.95 - £234 - 120 - 45 =) (£) 12.39*	*M2* *A2* *A1*	*Or equivalents* *M1 for any 1 or 2 correct methods* *A1 for any 1 or 2 correct evaluations* *(= £411.39 – £399)* *FT for the sum of 3 amounts – (234 + 120 + 45) provided 2 of these 3 amounts are correct*
6. (Mass of sugar =) $1920 \times 3 \div 16$ or $\frac{3}{16} \times 1920$ 360 (g) (Number of eggs = 360 ÷ 90 =) 4 (Mass of sultanas = 360 ÷ 90 × 50 =) 200 (g)	M1 A1 B1 B1	Or 0.1875 × 1920 Do not accept from incorrect working FT 'their derived 360' ÷ 90, rounded or truncated to a whole number of eggs FT 'their derived 360' ÷ 90 or FT 'their 4' × 50 provided 'their 4' ≠ 1
7.(a) Perimeter (circumference of the circular table) $\pi \times 1.5$ or $2 \times \pi \times 0.75$ 4.7(...m) Rectangular table perimeter 5.6 (m) **AND** the usion that rectangular perimeter is greater	M1 A1 E1	 5.6 (m) must be seen or implied by the difference between 5.6 (m) and 'their circumference' FT depends on M1 previously awarded

<table>
<tr><td>7.(b) Circular table area $\pi \times (1.5 \div 2)^2$

1.76(... m^2) or 1.77 (m^2) or 1.8 (m^2)

Rectangular table area 1.6 (m^2) AND the conclusion ‘no’ (the circular table area is greater)</td><td>M1

A1

E1</td><td>Allow an answer truncated to 1.7(m^2)

1.6 (m^2) must be seen or implied by the difference between 1.6 (m^2) and ‘their area of circle’
STRICT FT from ‘their conclusion in (a)’ for the conclusion in (b), provided M1 previously awarded in (b)
<table>
<tr><th>Answers in (a)</th><th>Answers in (b)</th><th>Conclusion</th></tr>
<tr><td>rectangle > circle</td><td>rectangle < circle</td><td>no</td></tr>
<tr><td>rectangle < circle</td><td>rectangle < circle</td><td>yes</td></tr>
<tr><td>rectangle > circle</td><td>rectangle > circle</td><td>yes</td></tr>
<tr><td>rectangle < circle</td><td>rectangle > circle</td><td>no</td></tr>
</table>
If they match it is ‘yes’, if they don’t it is ‘no’
‘Their conclusion’ from (a) may be inferred
If ‘yes’ or ‘no’ is not stated then it must be unambiguously implied

If no marks, award SC1 for meeting all three of the following requirements:
1. $\pi \times 1.5^2 = 7(.0...m^2)$ or 7.1(m^2)
OR ½ × π × 1.5^2 = 3.5(...m^2)
2. Rectangular area 1.6 (m^2)
OR implied by the difference between 1.6 (m^2) and ‘their area of circle’
3. Appropriate conclusion of ‘yes’ or ‘no’</td></tr>
<tr><td>8.(a) 1.04 m^2</td><td>B1</td><td></td></tr>
<tr><td>8.(b) Positive</td><td>B1</td><td></td></tr>
<tr><td>8.(c) Garth’s height 1.65 (m)</td><td>B2</td><td>Accept 165 cm written in the answer space, but must state cm, allow 165 cm without the ‘m’ crossed out
Allow B1 for 165 written in the answer space

B1 Correct working, Ella’s height 1.6(0 m) or 160 (cm) or Garth’s area of skin 1.7 (m^2) . Allow this:
• if any of the above values are given in the answer space provided the correct units are written, allowing without ‘m’ crossed out, or
• for either point (1.6, 1.54) unambiguously labelled Ella or the point (1.65, 1.7) unambiguously labelled Garth on the graph</td></tr>
</table>

9. 1000 × 250 ÷ 28350 or 250000 ÷ 28350 or 250 ÷ 28.35(0) 8.8(18...) (applications)	M2 A1	M1 for sight of appropriate digits with division with incorrect place value of mass(es) Do not allow for division inverted Do not FT from M1 Accept answers of 8 or 9 (applications) from correct working Ignore the unit of the answer given as 'ounces'
9. <u>Alternative method</u> 28(.)350 × 9 = 255(.)150 or 28(.)350 × 8.8 = 249(.)480 8.8(18...) (applications)	*M2 A1*	*Or for use of a value between 8.8 and 9 M1 for 28(.)350 × 8 = 226(.)800 **and** possible M1 for 250(.)000 – 226(.)800 = 23200 (mg) (which is < 28350 mg) OR M1 multiple of 28(.)350 × 9 = 255(.)150 or 28(.)350 × 8.8 = 249(.)480 with incorrect place value of mass(es) Do not FT from M1 Accept answers of 8 or 9 (applications) from correct working Ignore the unit of the answer given as 'ounces' Note: Sight of 28(.)350 × 8 = 226(.)800 **only** with an answer of 8 (applications) is awarded M1 A1*