GCSE MARKING SCHEME

AUTUMN 2023

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

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.

GCSE Numeracy Unit 2: Foundation Tier	Mark	Comments
1(a) **No and** suitable reason given e.g. 'because on Friday he walked less than 10000 steps' 'because Friday is (only) 9754' 'because Friday is below 10000'	E1	Ignore spurious comments if No indicated and an appropriate reason is given. Allow the following with **no** indicated: 'because Friday is less' 'didn't walk 10000 on Friday' 'Friday didn't walk to 10000' 'Friday didn't achieve 10000' 'The first 4 days he did but the last day he only got a 4-digit number' 'because Friday was 9000' Do not allow 'Yes' indicated with a reason e.g. 'Glen has achieved his target' 'Friday is nearly 10000' 'he has achieved at least 10000 steps because 9754 is closer to 10000 than 9000 if rounded up'
1(b) 8285 (steps)	B2	Allow embedded answers such as 58285 – 8285 = 50000 Award B1 for any one of the following: • 10672 + 13586 + 12341 + 11932 + 9754 – 50000 • subtracting 50000 from an attempt at adding the 5 given values • 58285 – 50000 • 58285
1(c) 13600	B1	
2(a)(i) 08:22 or 8:22 (a.m)	B2	Allow 08:22 a.m Allow 08:22 – 08:47 as an indication that it is the 08:22 train from Bridgend. Allow indication that it is the train that **arrives** at Cardiff at 08:47 or **arrives** at Cardiff at 8:47 (a.m) Award B1 for • (0)8:22 p.m • sight of (0)8:50 (a.m) • (0)8:47 (a.m) (i.e. doesn't state that it arrives at Cardiff at (0)8:47 a.m) • (0)8:57 (a.m)

2(a)(ii) (0)8:26 (a.m.) AND 28 mins	B3	Answer lines take precedence Workings may be seen in or by the table If B3 not awarded: Award B2 for: • (0)8:26 (a.m.) • 28 mins • If both answer lines are incorrect or no answer is given, then award B2 for sight of all 4 times for the length of journey with up to **one error** (i.e. 4 correct or 3 correct and 1 incorrect) OR 3 correct times for the length of journey with **one omission**. Award B1 for any one of the following seen: • (0)7:43 (a.m.) AND 25 mins • (0)7:53 (a.m.) AND 20 mins • (0)8:22 (a.m.) AND 25 mins • (0)8:26 p.m.
	2	
2(b) (Caz's Café = (£2.49 + 95p + 80p) × 5 or equivalent (£)21.2(0) (Simon's Sandwiches 3.50 × 5 =) (£)17.5(0) (Saving 21.20 – 17.50 =) (£)3.7(0)	M1 A1 B1 B1	Treat use of 7 days as a misread. (4.24 × 5) If M0 A0 award SC1 for sight of (£)4.24 FT 'their **stated or derived** 21.20' – 'their **stated or derived** 17.50' provided at least one mark previously awarded and not any value given in the question used and 2 costs have been stated or calculated and the saving is > 0. Misuse of units can be penalised in OCW
2(b) Alternative method *(Saving per day) (£)2.49 + 95(p) + 80(p) – (£)3.5(0)* *74(p) or (£)0.74* *(Savings for the week) 5 × 74(p)* *(£)3.7(0)*	*M1* *A1* *M1* *A1*	*Treat use of 7 days as a misread.* *(£)4.24 – (£)3.50* *Allow for sight of 0.74 or 74* *If M0 A0 award SC1 for appropriate sight of (£)4.24* *FT 5 × 'their 74(p)' provided M1 previously awarded* *Misuse of units can be penalised in OCW*
2(b). 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.

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3(a)(i)
(For Aber to Cwm:)
 	
        6 (miles) (5.9 to 6.1)
	B2	For B2, FT 'their distance measured' × 0.5 correctly evaluated provided the distance is in the range 11.8 to 12.2 cm
		
		Award B1 for:
		  • distance measured as 12(cm) (±2mm)
		  • 'their **stated** distance measured outside the range 11.8 to 12.2 cm' × 0.5 correctly evaluated

3(a)(ii)
(For Aber to Borth to Dinas:)
 	
        4 (miles) (3.8 to 4.2)
	B2	FT 'their distance measured' × 0.5 correctly evaluated provided the distance is in the range 7.6 to 8.4 cm
		
		Award B1 for:
		  • Total distance measured as 8(cm) (±4mm)
		  • 2 distances seen as 3(cm) (±2mm) AND 5(cm) (±2mm)
		  • 'their **stated** distance measured outside the range 7.6 to 8.4 cm' × 0.5 correctly evaluated
		  • 1.5 (miles) or 2.8 to 3.2(cm) **×** 0.5 correctly evaluated (for Aber to Borth)
		  • 2.5 (miles) or 4.8 to 5.2 (cm) **×** 0.5 correctly evaluated (for Borth to Dinas)

3

3(b) (Perimeter=) 106 + 68 + 106 + 68 or equivalent	M1	
348 (m)	A1	
5000 ÷ 348 or 348 × 15 or 348 × 14	M1	Division may be seen as repeated addition/subtraction or repeated trials. Allow 348 × 13 (= 4524) Allow 348 × 16 (= 5568) FT 'their derived perimeter' including partial perimeter but not use of 106 or 68 Use of area gains no marks

15 (laps)	A2	Accept a unique embedded answer for A2 or A1
		 e.g. Award A2 if only 348 × 15 = 5220 seen
		 e.g. Award A1 if only 348 × 14 = 4872 seen
		
		 Award A1 if both 348 × 15 = 5220 AND 348 × 14 = 4872 seen with **no** final answer given for the number of laps.
		
		 Award A1 for 14 or 14.4 or 14.37 or 14.3(6…..) or 14.5 seen.
		
		 FT 5000 ÷ 'their 348' for possible A2 or A1.
		 On FT, award A2 provided they have rounded **up** to the nearest whole number. Otherwise award A1 for a correctly evaluated answer for 5000 ÷ 'their 348' without rounding up.
		
		 If on FT the answer is a whole number with no rounding required award A1 only.
		
		 <u>For use of partial perimeter of 174cm</u>
		 5000 ÷ 174 = 29 laps award M0A0M1A2
		 5000 ÷ 174 = 28.7… award M0A0M1A1
		 If trials used (apply in line with the MS above):
		 • For 174 × 29 = 5046
		   Award M0A0M1A2
		 • For 174 × 28 = 4872
		   Award M0A0M1A1
		 • For 174 × 27 (= 4698) Award M0A0M1A0
		 • For 174 × 30 (= 5220) Award M0A0M1A0
		
		 Note: if 4872 seen from repeated addition but 28 laps not seen award M0A0M1A0 (need a value for the number of laps or an embedded value of the number of laps)

4. (22.5 (cm) ÷ 2·5) 9 (inches)	 B1	Ignore any incorrect units given. Workings may be on the diagram. May be implied
9 × 3.75 + 2.25	M1	FT 'their derived 9' provided ≠ 22.5
36 **and** no indicated	A1	FT appropriate response from 'their 9' Allow rounded or truncated answers on FT with the appropriate response.
4. Alternative method *((37 – 2.25) ÷ 3.75 =) 9.2(6…..)*	 *B1*	*Ignore any incorrect units given.* *Workings may be on the diagram.* *May be implied. Rounded or truncated*
9.2(6..) × 2.5	*M1*	*FT 'their derived 9.2(6….).' provided ≠ 37*
23(.16666….) ***and*** *no indicated*	*A1*	*Accept answers in the range 23 to 23.25*

5.		Penalise -1 once only if incorrect units given <u>Note:</u> All parts need to be looked at as final answer does not imply all 4 marks
3 × 1000(g) and 2 × 600(g) and 4 × 175(g) (3000 and 1200 and 700)	M1	Allow mixed units for M1
4900 (g) or 4.9 (kg)	A1	CAO. This may be implied by sight of 5180 or 5.18
(4900 + 280 or 4.9 + 0.28 =) 5180 (g) or 5.18 (kg)	B1	FT 'their 4.9kg or 4900g' provided M1 awarded and at least 2 of 3000 and 1200 and 700 have been added to 280
(£)22.90	B1	FT 'their total mass' for costs of signed and 1st class including if mass of box omitted. (Note: cost for 4.9kg without box is £16.85) Unsupported answer of (£)22.90 award final B1 only Award M2A0B1 for 3000 + 1200 + 700 + 280 seen but not the final mass and state costs as £22.90, Award M1A1B0B1 for mass as 4900g or 4.9kg and box not added on but write the costs as (£)22.90 or (£)16.85. For working with individual costs of the total mass of each type of candle and do not consider the box, M1 can be awarded plus: Award SC1 for final answer of (£)33.87 (from 16.85 + 10.02 + 7) For working with individual costs for each individual candle plus a box for each candle (the mass of each candle & box not given) Award SC2 for (6 x £7 + 3 x £10.02 =) (£)72.06 OR Award SC1 for 6 x £7 + 3 x £10.02 For working with the costs for each individual candle (mass of the candles not given) and no marks awarded (M0A0B0B0), award SC1 for (9 × £7=) (£)63
<i>5. Alternative method for those adding the mass of the box initially</i>		<i>Penalise -1 once only if incorrect units given <u>Note:</u> All parts need to be looked at as final answer does not imply all 4 marks</i>
<i>3 × 1000(g) + 2 × 600(g) + 4 × 175(g) + 280(g) (3000 + 1200 + 700 + 280)</i>	M2	<i>Allow mixed units for M1 or M2. Award M1 for one of the following:</i> • <i>a sum of 3 out of the 4 terms with one of the 3 being 280g.</i> • <i>sum of 4 terms with one product incorrect</i>
<i>5180 (g) or 5.18 (kg)</i>	A1	<i>FT from M1 only for their correctly evaluated sum</i>
<i>(£)22.90</i>	B1	<i>FT 'their total mass' for costs of signed and 1st class</i> <i>Unsupported answer of (£)22.90 award final B1 only</i>

6. Number of units 730		B1	Answer spaces take precedence throughout
Charge for units 730 × (0.)19		M1	For use of 730 or a **strict** FT 'their 730' from the first entry in the bill Award for sight of digits 1387(0)
	(£) 138.7(0)	A1	Must be in pounds
Standing charge (3 × £6.50 =) (£) 19.5(0) Total charges (£) 158.2(0)		B1 B1	Must be in pounds FT 'their 138.7(0)' + 'their 19.50' correctly evaluated, i.e. the sum of their 2 previous entries FT if total charges was previously given in the standing charge box, provided 'their cost of units' + 19.50 is correctly evaluated
VAT at 5% (£) 7.91		B1	Must be in pounds FT 5% of 'their 158.2(0)' correctly evaluated
Amount to pay (£) 166.11		B1	FT provided • B1 for total charges and B1 for VAT are both previously awarded, or • is correctly evaluated 'their total charges' × 1.05 On FT throughout, allow rounded or truncated to a penny.
7(a) 5 × 42 – (40 + 37 + 39 + 48) or 210 – 164 or equivalent OR 40 + 37 + 39 + 48 + ….. = 5 × 42 or 164 + … = 210		M2	May be shown in stages Allow missing brackets as the intention to subtract M1 for sight of any one of the following: • 5 × 42 or 210 (mm) • the idea that (40 + 37 + 39 + 48 + x) ÷ 5 = **42**, where x may be a gap, variable or a trial
	(Friday) 46 (mm)	A1	CAO. Do not award from incorrect working Answer space takes precedence Do not allow an embedded answer
7(a) Alternative methods *(Difference from mean) 42 + 2 + 5 + 3 – 6* *OR* *(Contributions to the mean each day)* $5 \times (42 - \frac{40}{5} - \frac{37}{5} - \frac{39}{5} - \frac{48}{5})$ *or equivalent* *(= 5 × 9.2)*		*M2*	
			M1 for $42 - \frac{40}{5} - \frac{37}{5} - \frac{39}{5} - \frac{48}{5}$
	(Friday) 46 (mm)	*A1*	*CAO. Answer space takes precedence*

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7(b) 5 × 42 ÷ 7 or 210 ÷ 7	M1	Allow 'their 46' from (a) has been truncated or rounded, FT any of the following: • 'their 5 × 42' ÷ 7 • ('their 40 + 37 + 39 + 48' + 'their 46') ÷ 7 • (164 + 'their 46') ÷ 7
30 (mm)	A1	Answer space takes precedence On FT, accept rounded or truncated answers provided working is shown
8. (Volume of the ornament is) ⅓ × 15 × 15 × 30 or ⅓ × 6750 or 6750 − ⅔ × 6750 or equivalent	M2	Allow also any of the following: • 0.33(3…) × 15 × 15 × 30 • 6750 − 0.66(6..) × 6750 • 6750 − 0.67 × 6750 M1 for sight of any of the following, or equivalents: • (Volume of the box is) 15 × 15 × 30 (= 6750 cm³) • 0.3 × 15 × 15 × 30 (= 2025 cm³) • ⅔ × 15 × 15 × 30 (= 4500 cm³) • 0.6 × 15 × 15 × 30 (= 4050 cm³) • 0.66 × 15 × 15 × 30 (= 4455 cm³) • 0.67 × 15 × 15 × 30 (= 4522.5 cm³) • 0.7 × 15 × 15 × 30 (= 4725 cm³)

2250 (cm³)	A2	CAO. Must be indicated and not ambiguously embedded
		
		A1 for any of the following:
		• (15 × 15 × 30 =) 6750 (cm³)
		May be embedded in an inappropriate calculation
		• 'their 15 × 15 × 30' ÷ 3 correctly evaluated
		• (0.3(33..) × 15 × 15 × 30)
		              2025 (cm³) ≤ 'their answer < 2250 (cm³)
		• (⅔ × 6750 =) 4500 (cm³)
		• (0.6 × 15 × 15 × 30 to 0.7 × 15 × 15 × 30)
		              4050 (cm³) ≤ 'their answer ≤ 4725 (cm³)
		• sight of a correct product with only 1 stage of calculation to evaluate, e.g.
		  ○ 225 × 10
		  ○ 5 × 450
		  ○ 15 × 150
		  ○ 75 × 30

9(a) (Sale price)		
45 – 0.18 × 45 or 45 × (1 – 0.18) or 45 – 8.1(0) or 45 × 0.82	M1	
(£)36.9(0)	A1	May be seen or implied in further working
(Maggie's mum pays) 8 × 36.9(0) ÷ (8 + 1) or 36.9(0) – 36.9(0) ÷ (8 + 1) 8 × 4.1(0) or 36.9(0) – 4.1(0)	M1	FT 'their £36.90'
(£)32.8(0)	A1	On FT allow rounded or truncated to a penny

9(a) Alternative method		
(Maggie's mum's share of original price) *8 × 45 ÷ (8 + 1) or 45 – 45 ÷ (8 + 1)*	*M1*	
(£) 40	*A1*	*May be seen or implied in further working*
(Maggie's mum pays) *40 – 0.18 × 40 or 40 × (1 – 0.18)* *or 40 – 7.2(0) or 40 × 0.82*	*M1*	*FT 'their £40'*
(£)32.8(0)	*A1*	*On FT allow rounded or truncated to a penny*

9(b) (Area) ½ × 1.5 × (3.1 + 4.5)	M1	
5.7 (m²)	A1	Accept rounding to 6 (m²) May be seen or implied in further working
(Charge) 2.5(0) × 5.7	M1	FT 'their 5.7' (including if previously rounded to 6), including if 'their 5.7' is not an area Allow if 'their area' is costed in parts provided there is an attempt to sum all of the part costs, provided 'their 5.7' ≠ 1.5, 3.1 or 4.5
(£) 14.25	A1	CAO

10(a)		Answer spaces take precedence, if blank check the diagram
a = 54°	B1	
b = 54°	B1	FT 'their a'
c = 78°	B1	FT 132 – 'their a' or 132 – 'their b'

10(b) (10 ×) 29 × 30 ÷ 12 or equivalent or for an answer of 72.5	M2	Allow embedded with an incorrect change of units Allow (10 ×) 2.4(16…) × 30 M1 for any one of the following: • 30 ÷ 12 (= 2.5) • 29 ÷ 12 (= 2.4166…) • sight of 2.4, 2.41, 2.416(6…) or 2.42 • sight of (1 inch =) 2.5 (cm)
725 (mm)	A1	Answer space takes precedence Allow answers in the range 720 (mm) to 726 (mm) from premature approximation, not from incorrect working

11(a) 8 × 1172 ÷ 5 or 1172 × 1.6	M1	Do not allow 1172 × 1.5
1875.2 (km)	A1	Accept 1875 (km) from correct working Answer space takes precedence

11(b) 0.366 × 1000 ÷ 60	M1	
6.1 (m/s)	A1	Accept 6 (m/s) from correct working Answer space takes precedence