wjec cbac

GCSE MARKING SCHEME

SUMMER 2022

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

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 - NUMERACY

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Unit 2: Foundation Tier	Mark	Comments
1(a) (£)9.30 ÷ 5	M1	Sight of the digits 186 gains M1
(£)1.86 or 186(p)	A1	If units are given they must be correct
1(b) ((£)13.80 - (£)9.30) ÷ 2	M1	Sight of the digits 225 gains M1
		FT use of $5 \times$ 'their (£)1.86' stated in (a) instead of
		(£)9.30
(£)2.25 or 225 (p)	A1	If units are given they must be correct
2(a) 6 (°C)	B1	Accept -6 (°C)
	D1	Answer may be embedded within a sentence
2(b) 4-star	ВІ	
2(c) No and suitable reason given relating to time of 3	E1	Allow:
star and 4 star freezers being different e.g.		'No because from June to December is 7 months'
		'No because from June to December is 5 months'
'For 6 months, she needs a 4-star freezer'.		De net elleur
longer (than 3 months)?		Do not allow: 'No, because they are the same temperature'
'because June to December is more than 3 months'		'No because June to December is 4 months' i e
'because 3 stars is not long enough'		reference to the incorrect number of months.
'need longer than 3 months'		'No because the food will go off and you will have to
'needs 3 months or longer'		throw it away'
'need from June to December which is 6 months'		
'because the food won't last until December'		
3(a) Cuddly toy	B1	Allow cuddly toy and 12 given together
3(b) No and reason given e.g.	E1	Ignore additional spurious or incorrect statements for
		accepted and allowed responses
'The frequencies would all need to be the same for an		
equal chance'		
'no as it seems that there are more cuddly toys than		Allow
anything else		'different amounts available'
i nere aren t equal numbers of each prize		different amount of stock for the prizes
'numbers are not equal'		are 12 cuddly toys'
'different number of prizes'		'there's 12 cuddly toys and 2 photo frames'
'not equal to each other'		(comparison of any 2 or more)
'different amounts of different prizes'		'more prizes than others'
'cuddly toy is most common'		
'more of one thing than another'		
more likely to win a cuddly toy or box of chocolates'		
less chance to win a book or photo frame		Do not allow
less of certain prizes		there are only 2 photo traines (With nothing else said $-$ no comparison with any other prize)
		'different prizes'

3(c) (Cost of prizes without discount) $9 \times 1.80 + 12 \times 2.30 + 5 \times 3.20 + 2 \times 4.70$ (16.20 + 27.60 + 16 + 9.40)	M2	May be seen in stages Award M1 for: • the sum of 3 correct products • sight of all 4 correct products (even if not added)
(£)69.2(0)	A1	CAO
(Discount) (£)6.92	B1	Allow (£)6.9(0) if 6.92 seen FT 10% of 'their (£)69.2(0)' including 10% of (£)12 This may be implied in their final answer.
(Cost of prizes with discount) $(\pounds)69.2(0) - (\pounds)6.92$	M1	FT 'their (£)69.2(0)' – 'their (£)6.92' provided there has been an attempt at finding 10% and 10 or 0.10 is not used as their value of 10%
(£)62.28	A1	
3(c) <u>Alternative method 1</u> (10% discount for each prize) (£)0.18 or (£)0.23 or (£)0.32 or (£)0.47	B1	Accept 18(p) or 23(p) or 32(p) or 47(p). If units stated, they must be correct
Correct cost of all reductions 1.62 AND 2.07 AND 2.88 AND 4.23	B2	Award B1 for any one correct reduction
9 × 1.62 + 12 × 2.07 + 5 × 2.88 + 2 × 4.23 (£14.58 + £24.84 + £14.40 + £8.46)	M2	FT from B1, B1 Award M1 for the sum of 3 correct products
(£)62.28	A1	
3(c) <u>Alternative method 2</u> (10% discount for each prize) (£)0.18 or (£)0.23 or (£)0.32 or (£)0.47	B1	Accept 18(p) or 23(p) or 32(p) or 47(p). If units stated, they must be correct
(Total discount) $9 \times (\pounds) 0.18 + 12 \times (\pounds) 0.23 + 5 \times (\pounds) 0.32 + 2 \times (\pounds) 0.47$ $(\pounds 1.62 + \pounds 2.76 + \pounds 1.60 + \pounds 0.94)$	M2	FT 'their (£)0.18 or (£)0.23 or (£)0.32 or (£)0.47' Award M1 for the sum of 3 correct products
(Total discount) (£)6.92	A1	CAO
(Cost of prizes with discount) (£)69.2(0) – (£)6.92 (£)62.28	M1 A1	FT 'their (£)69.2(0)' – 'their (£)6.92
Organisation and communication Writing	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 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 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. Evidence of counting squares Number of squares 11 – 16 (squares or cm ²)		M1 A1	Look at diagram If 'their number of squares' is within the range and no evidence of counting squares award M1 A1 If count squares of whole grid (70) then M0A0. FT with this	
(Area = 'Their number of squares' $\times 0.5 \text{ m}^2$ =) 5.5 – 8 (m ²)		(m²)	B1	FT 'Their number of squares' × $0.5 (m^2)$ or 'Their number of squares' ÷ 2 (m^2) This B1 may be seen at the end eg 12 × 290 ÷ 2
				Award M1A1B1 when no evidence of number of squares counted and a value between 5.5 and 8 is multiplied by 290. This would then get final M1 and a possible A1
(Cost of glass=) 'their area' \times (£)290		£)290	M1	FT 'their area' \times (£)290 provided M1 or B1 previously
				Allow rounded value of $(£)300$ used for $(£)290$
Correct answer		wer	A1	
				Note: check if 290 has been ÷ 2 rather than number
				of squares ÷ 2
				Check 145 × humber of squares
5.			БО	Look at the given table for some equivalent values
Showing (47%), <u>20%,</u> (5%), <u>3%</u> and <u>25%</u>			B2	OR all correct decimals
OR <u>0.47</u> , (0.2), <u>0.05</u> , (0.03) and <u>0.25</u>				OR all correct fractions with a common denominator
OR 47/100, 20/100, 5/100, 3/100 and 25/100				OR correct work using a common amount OR a valid combination that allows full comparison
OB five correct calculations for a common amount		nt		Award B1 for any 2 correct conversions
	Ocean		B1	Allow any unambiguous indication (e.g. 'converted
Largest	Pacific (47%)			Strict FT of 'their work' if at least B1 gained.
	Atlantic (1/4)			
Indian (0.2)				Correct answer (either oceans or proportions) with potential other marks awarded, gains final B1.
	Southern (5%)			
Smallest Arctic (0.03)				

6(a). $(5 \times 30 + 4) \times 4$ or $20 \times 30 + 4 \times 4$ (154×4) or $(600 + 16)$	M2	Look at diagram May be seen in stages Award M1 for sight of: • $(5 \times 30) \times 4 (=600)$ • $5 \times 30 + 4 (=154)$ • $(5 \times 30) \times 4 + multiple 4 (\leq 20)$
616 (cm)	A1	 FT for 'their perimeter' provided at least M1 awarded AND 4 sides considered 600 600 + multiple 4 (≤ 20) correctly evaluated
		Eg (5 × 30) × 4 = 600 gains M1 A1
6.16 (metres)	A1	FT 'their perimeter' for correct conversion to metres provided at least M1 awarded
		Eg A final answer of 6(m) gains M1 A1 A1
		If no marks awarded, award SC1 for sight of • 16(cm) or 0.16(m) • 150(cm) or 1.5(m)
6(b) 1·3 × 0·4 or 130 × 40	M1	Must be only the correct method but allow if x/\div by power of 10
0·52 or 5200	A1	Mark final answer Allow 0.5 provided no incorrect working seen
m ² or cm ²	U1	Correct units for 'their area'
		Eg $1.3 \times 0.4 = 0.52$ $0.52 \times 100 = 52 \text{ cm}^2$ Award M1 A0 U1 (attempt to change to cm ²)
7(a) 1 (km)	B1	
7(b) 71/2 hours	B1	
7(c) 5 (km)	B1	
8(a) (Breakfast recommendation is) 0.35 × 2400 or 240 + 240 + 240 + 1/2 of 240 or 2400 - 0.65 × 2400 or equivalent	M1	(= 840) May be seen in stages 35% of 2400 without further working is awarded M0 Sight of 240 + 240 + 240 + 24 is awarded M0
(Difference in calories) 860 - 0.35 × 2400	M1	Allow 0.35 × 2400 – 860 for M1 FT 860 – 'their derived 840' irrespective of how 'their 840' was derived
20 (calories)	A1	CAO. Answer of -20 (calories) is A0 Allow incorrect units seen, e.g. 20%
8(a) <u>Alternative method</u> (Difference in calories) (860 ÷ 2400 – 0.35) × 2400 20 (calories)	M2 A1	M1 for 860 ÷ 2400 – 0.35 CAO. Allow incorrect units seen, e.g. 20%
8(b) 23 : 5	B1	Must be whole numbers, mark final answer Allow 23g : 5g

9.				If an answer space blank, check working below the table to mark any unambiguous intention
Number of units	520		B1	Answer shown in the space in the row with the meter readings takes precedence If the space in the row with meter reading is blank, allow if 520 seen in the charge for electricity row
Charge for units	520 × (0.)21		M1	FT 'their 520', the number of units used must be given or clear from the units row Award for sight of digits 1092(0) or equivalent on FT
		(£) 109.2(0)	A1	Must be in pounds.
(Standing charge)	(3 months)	(£) 21(.00)	B1	
Total charges		(£) 130.2(0)	B1	FT 'their $109.2(0)$ ' + 'their $21(.00)$ ' correctly evaluated, provided neither amount = 0
VAT at 5%		(£) 6.51	B1	FT 5% of 'their 130.2(0)' correctly evaluated, allow rounding or truncation to a penny (2 d.p.)
Amount to pay		(£) 136.71	B1	CAO
10(a) (Circumference)) π × 140		M1	Do not accept embedded within an incorrect calculation for the circumference
Answer in the range 439 (cm) to 440 (cm)		A1	May be implied in later working	
$\pi \times 140 - 176 - 128 - 60$ or $\pi \times 140 - 364$ or equivalent		M1	FT 'their derived circumference' from a calculation involving π (including use of πr or πr^2), including from previous truncation or rounding errors	
Answer in the range 75.6 (cm) to 76 (cm)		A1	CAO, answer must be in the range stated. If no final answer given, check if an answer has been inserted in the statement in the question	
10(b) (Area =) ½ × (4.3 + 5.6) × 2.5 or 2.5 × 4.3 + ½ × 2.5 × (5.6 - 4.3) or equivalent		M1		
		12.375 (m²)	A1	Allow 12.37(m ²), 12.38(m ²) or 12.4 (m ²) provided not from incorrect working (e.g. $4.3 + 2.5 + 5.6 = 12.4$) May be implied in further working
(Number of bags) 12.375 ÷ 0.9 or 13.75		M1	FT 'their 12.375' including the use of 12.375 rounded or truncated Allow for a trial and improvement method provided the final trial gives 14 bags, e.g. for sight of $0.9 \times 14 = 12.6$	
		14 (bags)	A1	Must be rounded up to a whole number of bags Allow for an embedded answer of 14 (e.g. from within a multiplication)
(Cost of fertilizer is 14	× £1.15)	(£) 16.1(0)	B1	FT provided a whole number of bags considered and at least 1 mark (M1) previously awarded

11(a) Every 15 minutes	B1	
11(b) 14(:)00 or 2 p.m.	B1	Allow an answer of 2 or 14(:)00p.m. Do not accept an answer of 2 a.m.
11(c) 11 (°C)	B1	
11(d)(i) 5 points plotted accurately: (12:00, 100), (13:00, 105), (14:00, 110), (15:00, 109), (16:00, 109)	B1	Plotting of 100 and 110 should be intention of being on the appropriate line Tolerance for plotting 105 and 109 is within the appropriate small square Ignore any joining of plotted points
11(d)(ii) Appropriate reason, e.g. 'the rise in temperature doesn't look very much', 'it is only temperatures from 100°C that are needed', 'not showing the warning light was on as often as it was', 'it doesn't show the fluctuating temperature', 'doesn't show the number of warnings given (when over 110°C)', 'more details are required to show the warnings',	E1	Ignore additional spurious or incorrect statements for accepted and allowed responses Allow, e.g. 'misleading' with a suitable reason given 'doesn't give the same detail (as the first graph)', 'doesn't give the details of temperature changes', 'it doesn't give the accurate temperature changes', 'odesn't give the accurate temperature changes', 'only shows specific times', 'only recording once an hour', 'there is no data to fill the gaps', 'the temperatures between are not shown', It doesn't give all the information', 'not all the points plotted from the previous graph', 'small scale', 'the temperature goes up in 2's rather than 0.5', 'lost loads of the data', 'there are not many points', 'it doesn't change much to show when something went wrong', 'there are no temperatures recorded below 100°C' Do not accept, e.g. 'misleading', 'not accurate', 'it doesn't give the accurate temperatures', 'the temperatures aren't the same as the first graph', 'most points are not over 110°C', 'the temperature goes higher on the axis than the other graph'