



GCSE MARKING SCHEME

AUTUMN 2022

**GCSE
MATHEMATICS – NUMERACY
UNIT 1 – FOUNDATION TIER
3310U10-1**

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

AUTUMN 2022 MARK SCHEME

Unit 1: Foundation Tier	Mark	Comments										
1. Rounded values <table><tr><td>Item</td><td>Cost (£)</td></tr><tr><td>Dress</td><td>200</td></tr><tr><td>Shoes</td><td>40 or 39</td></tr><tr><td>Bag</td><td>30 or 28</td></tr><tr><td>Jewellery</td><td>20 or 19</td></tr></table> Correct total given 200 + 40 + 30 + 20 = (£)290 200 + 40 + 30 + 19 = (£)289 200 + 40 + 28 + 20 = (£)288 200 + 40 + 28 + 19 = (£)287 200 + 39 + 30 + 20 = (£)289 200 + 39 + 30 + 19 = (£)288 200 + 39 + 28 + 20 = (£)287 200 + 39 + 28 + 19 = (£)286	Item	Cost (£)	Dress	200	Shoes	40 or 39	Bag	30 or 28	Jewellery	20 or 19	B2 B1	Award B2 for all 4 values correctly rounded Award B1 for 2 or 3 values correctly rounded FT 'their approximate' values if at least B1 previously awarded. Allow an equivalent calculation that implies the same conclusion e.g. the shoes, bag and jewellery are less than (£)100. If no marks, award SC2 for: - total given as £285.57 then rounded to £286 or £290. - a correct total given using one rounded and 3 truncated values or all 4 truncated values Note truncated values are: 199, 38, 27, 18 (=£282) If no marks, award SC1 for: - total given as £285.57. - sight of one rounded and 3 truncated values or all 4 truncated values e.g sight of 199, 38, 27 &18 If no working shown, award SC1 for a whole number answer in the range (£)286 to (£)290.
Item	Cost (£)											
Dress	200											
Shoes	40 or 39											
Bag	30 or 28											
Jewellery	20 or 19											
2(a) one hundred and ninety-five thousand	B1	Do not accept - one hundred thousand and ninety-five thousand 195 thousand										
2(b) Caernarfon Castle	B1	Allow (+)0.2(%) as indication of Caernarfon Castle										
2(c) 255949 + 260153 516 102	M1 A1											
2(d) 452 007 – 319 131 132 876	M1 A1	Allow 319 131 – 452 007 Allow -132 876										

2(e) Yes and valid reason given e.g. 'Yes, because 455 428 is nearly 500 000' 'Yes, because if you round up 455 428 to the nearest hundred thousand it is 500 000' 'Yes, as 455 428 is closer to half a million than 400 000' 'Yes, because rounding to the nearest 100 000 would give you half a million'	E1	Allow e.g. 'Yes, because they had over 450 000' 'Yes, as only about 50 000 away from half a million' 'Yes, because 455 428 is <u>nearly</u> half a million' 'Yes, as you would round up to the nearest 50 000' 'Yes, as half a million is 500 000' 'No because it is nearly 45 000 short' 'No as it was only 455 428 so that's not quite half a million' 'No, because it is closer to 450 000' 'No because it is 460 000' 'No, because it is about 50 000 below' 'No, because it is just over 450 000' 'No, because the number is below 500 000 so it isn't half a million' 'No, because half a million is 500 000 but the number is 455 428' 'No because it would be in the 500 000 so he is wrong because 455 428 is less than half a million' Do not accept e.g. 'Yes, because 455 428 is <u>about</u> half a million' – this is the statement given 'No, because it's only 455 428' 'No because 455 428 isn't close to half a million as it is in the 4s' 'No, because they got 455 428'
2(f) Evidence of counting squares inside shape Answer in range 14 to 20 Correct evaluation of 'their area' $\times 4$ and manager correct Or $48 \div 4 = 12$ and manager correct	M1 A1 E1	FT if M1 awarded for a correct evaluation of 'their area' $\times 4$ and conclusion made consistent with their answer OR 'their area' is in the range 13 to 22 with 'their area' $\times 4$ correct and manager correct
<u>Alternative method</u> Evidence of splitting each square into 4 Answer in range 56 to 80 Correct evaluation (conclusion) of the area with manager correct	M1 A1 E1	Or for counting up in 4s up to at least 20 Must not come from incorrect work FT if M1 awarded with conclusion made consistent for 'their area' OR 'their area' is in the range 52 to 88 with correct conclusion
3. 29 16 35	B4	Answer box takes precedence If B4 not awarded: Award B1 for 29 selected Award B1 for 16 selected Award B2 for 35 selected or award B1 for 21 selected (if both 21 and 35 given, award B1) Penalise -1 if all the 3 two-digit numbers are correct but not in the correct order. Allow unambiguous answers for each statement written in each box (ie using 12 digits)

4(a) 7	B1	
4(b) 9	B1	
4(c) No and valid reason given e.g. 'No because you add two onto each of the design numbers' 'No because it is the design + 2' 'No because that rule doesn't work for Design 2' 'No because Design 2 uses 4 pieces (not 6)' 'No, because for design 2, $2 \times 3 = 6$, design 3, $3 \times 3 = 9$ and both totals are not correct' 'No, because design 3 has 5 pieces of metal which shows it is not multiplied by 3' 'No because design 3 would be 9 and not 5' 'No because the rule is $n + 2$ not $n \times 3$'	E1	Ignore any further spurious comments. Do not accept 'No, because the designs add one more piece of metal each time' 'No because you add on 1 each time' Do not accept values from incorrect number work e.g. 'No because design 3 would be 6 and not 5'
4(d) $180 - (55 + 90)$ or $90 - 55$ 35(°)	M1 A1	
4(e) $(30 - 14) \div 2$ (£)8	M1 A1	May be seen in stages Allow sight of embedded 8 for M1, e.g. $2 \times 8 + 14 = 30$ $2 \times 8 = 16 + 14 = 30$ Award M1 for sight of two correctly evaluated improving trials e.g. $2 \times 6 + 14 = 26$ AND $2 \times 7 + 14 = 28$ Answer line takes precedence – do not award A1 if answer line states £30 If answer line is blank, accept embedded answers provided that it is not contradicted (e.g. if they say <i>cost of materials is 30</i>)

5. (Gerry already has) $800 \div 10 \times 3$ (£)240 (Manager gives $25/100 \times 800$) (£)200 (Need to save) $800 - 240 - 200$ or $800 - (240 + 200)$ = (£)360 (Number of weeks) 5	M1 A1 B1 M1 A1 B2	FT 'their derived 240' AND 'their derived 200'. FT 'their derived 360' if not a multiple of 80 Award B2 only if there are no errors in the required working. Award B1 for any of the following: • $360 \div 80 (=4.5)$ • $(360 - 4 \times 80 =) 40$ • $(360 - 5 \times 80 =) -40$ • $(4 \times 80 =) 320$ • $(5 \times 80 =) 400$ • 4×80 AND 5×80 or equivalent • An answer of 4 weeks from using £360 • A correct FT answer where 'their 360' is a multiple of 80
<u>Alternative method for the last 4 marks</u> (Total received $240 + 200 =$) (£)440 (Number of weeks) 5	B1 B3	FT 'their derived 240' and 'their derived 200' FT 'their derived 440' if not a multiple of 80 for B3, B2 or B1 Award B3 only if there are no errors in the required working. Award B2 for any of the following: • $(440 + 4 \times 80 =) 760$ (multiple below 800) • $(440 + 5 \times 80 =) 840$ (multiple above 800) • $440 + 4 \times 80$ AND $440 + 5 \times 80$ or equivalent • for an answer of 4.5 weeks • A correct FT answer where 'their 440' is a multiple of 80 Award B1 for any of the following: • $440 + 4 \times 80$ or equivalent (the week below 800) • $440 + 5 \times 80$ or equivalent (the week above 800) • An answer of 4 weeks from use of £440 • An incorrect FT answer (number of weeks) from 'their 440' counting up correctly in 80s to 2 80s below or at least 2 80s above
<u>Alternative method for the first 4 or 5 marks if combine the percentages (or equivalent)</u> (Total percentage given) $25\% + 30\%$ or equivalent 55% or equivalent (Total received) $55/100 \times 800$ (£)440 (Need to save $800 - 440 =$) (£)360	M1 A1 M1 A1 B1	FT 'their derived 55%' FT 800 - 'their derived 440'

7(a) (Area of the small picture is) 10×5 OR (Area of the large picture is) 40×15 (Area of the small picture is) $50 \text{ (cm}^2\text{)}$ (Area of the large picture is) $600 \text{ (cm}^2\text{)}$ (Cost to print large picture is) $\frac{600}{50} \times 2(.00)$ OR For a full proportion method calculated correctly or or with working shown, e.g. 50cm^2 is (£)2, 100cm^2 is 2×2 (=£4), 150cm^2 is $2 + 2 \times 2$ and 600cm^2 is $4 \times (2 + 2 \times 2)$ (£)24 or 2400(p)	M1 A1 A1 M2 A1	May be implied in further working May be implied in further working May be seen in stages FT 'their 10×5' and FT 'their 40×15' M1 for any one of the following: (Cost to print 1cm^2) $2(.00) \div 50$ or $4(p)$ or (£)0.04 $600 \div 50$ or $(600 \div 50 =) 12$ or $12 \times 50 = 600$ 'their cost to print per 1cm^2' $\times$ 'their 40×15' - Proportion method that would lead to a correct response, but includes one error, e.g. 50cm^2 is (£)2, 100cm^2 is (£)4, 150cm^2 is <i>without working</i> '(£)5' with 600cm^2 is $(4 \times 5 = £) 20$ - FT for 'their 50' and 'their 600' (including if perimeters or semi-perimeters) Only FT from previous M2 If units are given they must be correct
<u>7(a) Alternative method 1</u> (To find the number of small pictures to cover area of the large picture) $40 \div 10$ AND $15 \div 5$ 4 (up) and 3 (across) (Cost to print the large picture) $4 \times 3 \times (£) 2$ or equivalent (Cost to print large picture) (£)24 or 2400(p)	M1 A2 M2 A1	Allow $40 \div 5$ AND $15 \div 10$ May be shown on a diagram Allow 8 and 1.5 (from $40 \div 5 = 8$ and $15 \div 10 = 1.5$) A1 for any one of the 4 possible divisions accurately evaluated FT 'their 4 across and 3 up' provided 2 different values $\neq 1$ Allow $8 \times 1.5 \times (£)2$ M1 for appropriate sight of 4×3 or 8×1.5 including if embedded in other working FT from M2 only If units are given they must be correct
7(b) $(10 + 5 + 10 + 5) \times (0.)40$ or $30 \times (0.)40$ or $10 \times (0.)40 + 5 \times (0.)40 + 10 \times (0.)40 + 5 \times (0.)40$ or $4 + 2 + 4 + 2$ or $400 + 200 + 400 + 200$ (£)12 or 1200(p)	M2 A1	M1 for sight of any one of the following: $10 + 5 + 10 + 5$ (= 30 cm) $(10 + 5) \times (0.)40$ (= £6 or 600p) $10 \times (0.)40 + 5 \times (0.)40$ (=£6 or 600p) (2, 4,) 2 and 4 (check diagram) (200, 400,) 200 and 400 (check diagram) ('their height' + 'their width') $\times 2 \times (0.)40$ CAO. If units are given they must be correct If no marks, award SC1 for an answer of (£)44 or 4400(p) (working with the larger picture)

8. Compare small with large using same <u>volume</u>, e.g. • Volume of 4 small cartons • Cost of 4 small cartons • Cost of 500ml of large carton OR Compare medium with large using <u>volume and cost</u>, e.g. • Cost for 2400ml medium cartons • Cost of 1000ml large carton Compare the small with the medium using <u>cost</u>, e.g. • Volume for £1.20 in small cartons • Cost of 3 small cartons • Volume of 1/3 of a medium carton • Cost of 400 ml medium carton Conclusion ‘small’ based on accurate calculations from full comparison	B1 Accept for ‘their 4’ from $2000 \div 500$ Ignore incorrect units given <table><tr><td>4 small</td><td>vol</td><td>4×500</td><td>2000ml</td></tr><tr><td>4 small</td><td>cost</td><td>$4 \times (0.)40$</td><td>£1.6(0) or 160p</td></tr><tr><td>500ml large</td><td>cost</td><td>$2(.)50 \div 4$</td><td>£0.625 or 62.5p</td></tr><tr><td>2400ml medium</td><td>cost</td><td>$2 \times 1(.)20$</td><td>£2.40 or 240p</td></tr><tr><td>1000ml large</td><td>cost</td><td>$2(.)50 \div 2$</td><td>£1.25 or 125p</td></tr></table> B1 Accept for ‘their 3’ from $1200 \div 400$ Ignore incorrect units given <table><tr><td>£1.20 in small</td><td>vol</td><td>3×500</td><td>1500 ml</td></tr><tr><td>3 small</td><td>cost</td><td>$3 \times (0.)40$</td><td>£1.20 or 120p</td></tr><tr><td>1/3 medium</td><td>vol</td><td>$1200 \div 3$</td><td>400 ml</td></tr><tr><td>400 ml medium</td><td>cost</td><td>$1(.)20 \div 3$</td><td>£0.4(0) or 40p</td></tr></table> B1 Only FT from B1, B1 Must have consistent correct units or allow no units given	4 small	vol	4×500	2000ml	4 small	cost	$4 \times (0.)40$	£1.6(0) or 160p	500ml large	cost	$2(.)50 \div 4$	£0.625 or 62.5p	2400ml medium	cost	$2 \times 1(.)20$	£2.40 or 240p	1000ml large	cost	$2(.)50 \div 2$	£1.25 or 125p	£1.20 in small	vol	3×500	1500 ml	3 small	cost	$3 \times (0.)40$	£1.20 or 120p	1/3 medium	vol	$1200 \div 3$	400 ml	400 ml medium	cost	$1(.)20 \div 3$	£0.4(0) or 40p
4 small	vol	4×500	2000ml																																		
4 small	cost	$4 \times (0.)40$	£1.6(0) or 160p																																		
500ml large	cost	$2(.)50 \div 4$	£0.625 or 62.5p																																		
2400ml medium	cost	$2 \times 1(.)20$	£2.40 or 240p																																		
1000ml large	cost	$2(.)50 \div 2$	£1.25 or 125p																																		
£1.20 in small	vol	3×500	1500 ml																																		
3 small	cost	$3 \times (0.)40$	£1.20 or 120p																																		
1/3 medium	vol	$1200 \div 3$	400 ml																																		
400 ml medium	cost	$1(.)20 \div 3$	£0.4(0) or 40p																																		
<u>8. Alternative method 1</u> Method of comparing all 3 cartons, e.g. ml per 10p or p per 100ml or £ per 6000 ml Conclusion ‘small’ based on accurate calculations from full comparison	M2 Ignore incorrect units given M1 for attempt to compare at least 2 of the 3 cartons <table><tr><td></td><td>Small</td><td>Medium</td><td>Large</td></tr><tr><td>ml for 10p</td><td>$500 \div 4 = 125$</td><td>$1200 \div 12 = 100$</td><td>$2000 \div 25 = 80$</td></tr><tr><td>p per 100 ml</td><td>$40 \div 5 = 8$</td><td>$1(.)20 \div 12 = 10$</td><td>$2(.)50 \div 20 = 12.5$ Allow 12 or 13</td></tr><tr><td>£ per 6000ml</td><td>$12 \times 0(.)40 = 4.80$</td><td>$5 \times 1(.)20 = 6$</td><td>$3 \times 2(.)50 = 7.50$</td></tr></table> A1 Only FT from M2 Must have consistent correct units or allow no units given From division calculations, allow rounding and truncation provided it does not impact on being able to compare		Small	Medium	Large	ml for 10p	$500 \div 4 = 125$	$1200 \div 12 = 100$	$2000 \div 25 = 80$	p per 100 ml	$40 \div 5 = 8$	$1(.)20 \div 12 = 10$	$2(.)50 \div 20 = 12.5$ Allow 12 or 13	£ per 6000ml	$12 \times 0(.)40 = 4.80$	$5 \times 1(.)20 = 6$	$3 \times 2(.)50 = 7.50$																				
	Small	Medium	Large																																		
ml for 10p	$500 \div 4 = 125$	$1200 \div 12 = 100$	$2000 \div 25 = 80$																																		
p per 100 ml	$40 \div 5 = 8$	$1(.)20 \div 12 = 10$	$2(.)50 \div 20 = 12.5$ Allow 12 or 13																																		
£ per 6000ml	$12 \times 0(.)40 = 4.80$	$5 \times 1(.)20 = 6$	$3 \times 2(.)50 = 7.50$																																		

9(a)(i) $(175 - 55) \div 8$ or $120 \div 8$ (£) 15	M1 A1	May be seen in stages CAO. Allow an embedded answer of 15, e.g. $8 \times 15 = 120$
9(a)(ii) (Total including VAT is) $175 + 175 \times 0.2(0)$ or $175 \times 1.2(0)$ or equivalent (£) 210	M2 A1	May be seen in stages M1 for (VAT) $175 \times 0.2(0)$ or $17.5 + 17.5 (= 35)$ or equivalent If no marks, award • <u>either</u> SC2 for total including VAT correctly evaluated starting with charge 55, 15 or 'their 15' from (b)(i), i.e. 66, 18 or correctly evaluated 'their 15' $\times 1.20$ • <u>or</u> SC1 for a calculation for total including VAT starting with charge 55, 15 or 'their 15' from (b)(i), i.e. 55×1.20, 15×1.20 or 'their 15' $\times 1.20$ or equivalents
9(b)(i) 'No' selected or unambiguous implied with reason, e.g. 'no correlation' 'no pattern' '(points are) random' 'no trend' 'number of leaves is not affected by height'	E1	Allow, e.g. 'No' with 'different flowers have different (numbers of) leaves' 'scattered' 'the data (or answers) are not consistent' Do not accept, e.g. 'No' with 'there isn't a leaf with height 6cm' 'it does not show on the graph' 'there is no data for 6' 'it doesn't say how many there are' 'not enough research' 'sample too small' 'some points close together' 'data is not reliable'
9(b)(ii) 7.5 cm	B1	
9(b)(iii) $17.5 - 13$ or 9×0.5 4.5 (cm)	M1 A1	Allow $13 - 17.5$ Answer space takes precedence Allow FT -4.5 (cm) from $13 - 17.5$ If no marks, award SC1 for the difference correctly evaluated provided either 17.5 or 13 is correct
9(b)(iv) 80(%)	B2	Answer space takes precedence B1 for sight of any of the following: • 8/10 • $8 \div 10$ • (Including 23, $100 \times 9 \div 10 =$) 90 (%) B0 for '8 out of 10'

<u>10. Method 1 for 200 jars</u> (Cost of 200 jars) $200 \times (0.)23$ OR (Sales of 200 jars of jam) $200 \times 1(.)60$ (Cost of 200 jars) 4600(p) or (£)46 (Sales of 200 jars of jam) 32000(p) or (£)320 (Cost 200 jars + jam) (£94 + £46=) (£)140 or 14000(p) (Profit £320 - £140 =) 18000(p) or (£)180	M1 A1 A1 B1 B1	FT £94 + 'their derived £46' If units are given they must be correct FT 'their derived £320' – 'their derived £140'
<u>10. Method 2 for 200 jars</u> (Cost of jam for 200 jars) $200 \times (1(.)60 - 0(.)23)$ (=) £ 274 or 27400(p) (Profit £274 - £94 =)18000(p) or (£)180	M2 A2 B1	M1 for $1(.)60 - 0(.)23$ or (£)1.37 or 137(p) A1 for $200 \times 1(.)37$ If units are given they must be correct FT 'their derived £274' – £94
<u>10. Method for 1 jar</u> (Cost of ingredients for 1 jar of jam) $94(00) \div 200$ 47(p) or (£)0.47 (Cost of jam and jar) $(23p + 47p =) 70(p)$ or (£)0.7(0) (Profit for 1 jar of jam £1.60 – 70p =) 90(p) or (£)0.9(0) (Profit for 200 jars of jam) 18000(p) or (£)180	M1 A1 B1 B1 B1	FT 'their derived 47p' + 23p FT £1.60 - 'their derived 70p' May be seen or implied in later working If units are given they must be correct FT 'their derived 90p'