GCSE MARKING SCHEME

SUMMER 2022

GCSE
MATHEMATICS – NUMERACY
UNIT 1 – INTERMEDIATE TIER
3310U30-1

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

SUMMER 2022 MARKING SCHEME

Unit 1: Intermediate Tier	Mark	Comments
1(a) £3.80	B1	
1(b) 4 hours 20 minutes	B3	For B2 or B1, allow costs seen within repeated additions linked with the appropriate time B2 for sight of any of the following: • 260 minutes • £5.40 for 4 hours or for 240 minutes • ((£5.80 - £3) ÷ 40p =) 7 seen or implied **with** 7 lots of 20 minutes considered • 140 (minutes) (= 2 hours 20 minutes) • a final answer of 2 hours 20 minutes in the answer space B1 for sight of any of the following: • £4.20 for 3 hours or 2 hours 60 minutes, allow for 2.60 • (£5.80 - £3 =) £2.80 • (£5.80 - £3) ÷ 40p (= 7) • ((£5.80 - £3) ÷ 40p =) 7 allow for 7 provided it is **not** from incorrect working, it should be derived from 7 lots of 40p on to the £3, e.g. 7 lots of 40p. Ignore further incorrect working once awarded, such as an answer of 7 hours
2.(Total rainfall for 10 days is 10 × 1.8 =) 18 (Mean rainfall for 1st 11 days of April) (10 × 1.8 + 4) ÷ 11 (=) 2 (cm)	B1 M1 A1	May be implied in further working (e.g. from sight of 22 (cm) total rainfall) FT 'their incorrectly evaluated 10 × 1.8'
2. <u>Alternative method</u> *(Additional rainfall per day) (4 – 1.8) ÷ 11* *(=) 0.2 (cm)* *(Mean rainfall for 1st 11 days of April)* *(1.8 + 0.2 =) 2 (cm)*	*M1* *A1* *B1*	*FT 'their incorrectly evaluated (4 – 1.8) ÷ 11'*
Organisation and communication Writing	OC1 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.

3. Partial method, to find the cost of 200g of apples, e.g. 30p for 100g, 3p for 10g, 3 ÷ 5, 3/5, 300 ÷ 5, 3(00) × 200 ÷ 1000 (Cost of 200g of apples) 60(p) or (£)0.60 (Change is) (£)9.40 or 940(p)	M1 A1 A1	Must engage with 1 kg = 1000 g conversion and the cost If units are given they must be correct CAO. Allow £9.40p
4(a) 130 ≤ energy < 140	B1	Accept unambiguous indication, e.g. 130 – 140 Allow e.g.'130,140', '130 140' Do not accept the values 130, 140, 18 or a choice between the group and the frequency
4(b) Total of 37 (energy bars) $\frac{1 + 4 + 12}{37}$ $\frac{17}{37}$	B1 M1 A1	 FT 'their 37' provided > 'their 1+4+12' Also allow **one** error in misreading 1 frequency, which impacts consistently on 'their denominator' and possibly 'their numerator' Only FT 'their 37' provided • 'their 37' is 36 or 38 or 39 or • 'their 37' is clearly from an addition error in calculating 1 + 4 + 12 + 18 + 2 ISW for incorrectly simplifying their fraction
4(c) (100 ×) $\frac{2}{18 + 2}$ or (100 ×) 1 – (100 ×) $\frac{18}{18 + 2}$ 10 (%)	M1 A1	FT any repeated misread of the scale from (b) Award 2 marks for an answer of 10(%) unless from incorrect working

5(a) 100 × 720 ÷ 360 or 260 × 720 ÷ 360 or for sight of 1° is 2 bags	M1	
200 (large bags sold) and 520 (small bags sold)	A2	A1 for 200 (large bags) or 520 (small bags) or for 'their number of large bags' + 'their number of small bags' = 720
(Total sales) 200 × (£)1(.)80 + 520 × 80(p) (= £360 + £416)	M1	Ignore incorrect units stated, mark intention Or equivalents all in p or all in £ Accept equivalent 720 × 80p + 200 × (£)1 FT for 'their 200 large bags' × (£)1.80 and 'their 520 small bags' × 80p, provided 'their 200' ≥ 50 and 'their 520' ≥ 130, 'their 520' ≠ 'their 200' and both are whole numbers
(£) 776	A2	CAO A1 for either • a correctly evaluated sum with one correct evaluation of a product or • on **FT** for the correct evaluation of 'their smaller value'×(£)1.80 + 'their larger value'×80p For example 100 × (£)1.80 + 260 × 80p = £388 is awarded M0 A0 M1 A1 If initial M1, A2 awarded also award SC1 for one of the following seen: • 200 × 80(p) + 520 × (£)1.80 = (£)1096 • £360 **and** £416 (no method mark as not added) If no marks, award SC1 for sight of 260(°)
5(b) Method to compare, e.g. • (Small bag per kg) 2.5 × 80 or 80×1000÷400 • (Per 100g) small 80p ÷ 4 and large £1.80÷ 10 • (g per penny) 400 ÷ 80 and 1000 ÷ 180 • (Per 200g) 80p ÷ 2 and £1.80 ÷ 5 • (Per 2000g) 5 × 80p and 2 × £1.80 • (Large bag per 400g) £1.80 × 0.4	M1	Needs to show comparing like quantity with like
Accurate comparison calculation, e.g. • (Small bag per kg) £2 • (Per 100g) small 20p and large18p • (g per penny) small 5g and large 5.5(5...) or 5.6g • (Per 200g) small 40p and large 36p • (Per 2000g) small £4 and large £3.60 • (Large bag per 400g) 72p **AND** Conclusion, Large bag (better value)	A1	If units are given they must be correct
6. (a =) 32(°) (b =) 148(°) (c =) 122(°)	B1 B1 B1	 FT 180 – 'their a' provided a ≠ 90 FT 90 + 'their a' provided a ≠ 90 or 270 – 'their b' provided b ≠ 90

7(a) 18 (g)	B1	
7(b) 15 – 12.5 or 5 × 0.5 2.5 (cm)	M1 A1	
7(c) Sight of 20 (cm) (Wingspan in inches is) 12 × 20 ÷ 30 8 (inches)	B1 M1 A1	 Allow 20 ÷ 2.5 or 20 × 0.4 or equivalent CAO
7(d) Positive (correlation)	B1	Do not accept a description
7(e) An answer in the inclusive range 18.5 (cm) to 22.5 (cm)	B1	
8(a) 420 - 420 × 35 ÷ 100 (= 420 – 147) or (100 – 35) × 420 ÷ 100 or equivalent 273 (people)	M2 A1	M1 for any one of • 420 × 35 ÷ 100 • sight of 42 + 42 + 42 + ½ of 42 • sight of 147
8(b) 420 ÷ 20 × 17 357 (people)	M2 A1	M1 for any of the following: • 420 ÷ 20 (= 21) • sight of 21 CAO. Allow embedded as 420 : 357 Award A0 for 357 : 420
8(b) <u>Alternative method 1</u> *(420 ÷ 20) × (20 + 17) – 420 (= 777 – 420)* *357 (people)*	*M2* *A1*	*M1 for any of the following:* • *420 ÷ 20 (= 21)* • *sight of 21* • *sight of 777* *CAO. Allow embedded as 420 : 357* *Award A0 for 357 : 420*
8(b) <u>Alternative method 2</u> *420 – (20 – 17) × (420 ÷ 20) (=420 – 63)* *357 (people)*	*M2* *A1*	*M1 for any of the following:* • *420 ÷ 20 (= 21)* • *sight of 21* • *sight of 63* *CAO. Allow embedded as 420 : 357* *Award A0 for 357 : 420*
8(b) <u>Alternative method 3</u> *Full ratio method to find 357 people, e.g.* *(20 ×) <u>420</u> : 17 × <u>420</u>* *(20) 20* *357 (people)*	*M2* *A1*	*Allow seen in stages, including written as an appropriate sum of equivalent ratios, e.g. attempting 17 + 340 (from 20 : 17 and 400 : 340)* *M1 for any of the following:* • *420 ÷ 20 (= 21)* • *sight of 21* *CAO. Allow embedded as 420 : 357* *Award A0 for 357 : 420*

<table>
<tr>
<td>9(a) Lowest common multiple of 2 × 3 × 5 × 5 or 150 seen or implied, e.g.
listing multiples to 150 for nuts and washers and sight of 30 boxes of bolts,
sight of 5 × 30 = 150, 6 × 25 = 150 and sight of 30 boxes of bolts,

Table completed correctly, or sight of correct number of boxes in working, e.g.
<table><tr><td>Nuts</td><td>5 boxes</td></tr><tr><td>Bolts</td><td>30 boxes</td></tr><tr><td>Washers</td><td>6 boxes</td></tr></table></td>
<td>M2

A1</td>
<td>M1 for a method looking at factors or multiples, e.g.
• sight of 2 × 3 × 5 and 5 × 5
• sight of 6 × 5 and 5 × 5
• 30 with factors 5, 6 and 25 with factors 5, 5
• listing 30, 60, 90 and 25, 50, 75
• a common multiple of 150 (not the lowest) seen or implied, e.g. 300, 450, 600, ...

Answers in the table take precedence, e.g. if correct number of boxes 5 for nuts, 30 for bolts and 6 for washers in working but table incorrect, award M2 A0

If no marks, award SC1 for an answer with whole numbers of nuts, bolts and washers in the ratio 5:30:6, e.g. answers of 10, 60 and 12 respectively</td>
</tr>
<tr>
<td>9(b) 13.5(0 mm)</td>
<td>B2</td>
<td>B1 for sight of any one of:
• 6 × (2 + 0.25)
• 6 × 2 + 6 × 0.25
• sight of 2.25 (mm)
• correct evaluation of ‘6 × (2 + their 0.25)’ provided 0 < ‘their 0.25’ ≤ 0.5</td>
</tr>
</table>

10. 5.1×10^8	B2	Allow $5.10(00....) \times 10^8$ B1 for the correct value written in index form, e.g. 51×10^7 or 510×10^6 or B1 for the sight of either of the following • 51 000 000 and 5.1×10^7 • 5 100 000 000 and 5.1×10^9 • 5×10^8
11(a) Suitable uniform scales on both axes, costs to £110 and number of bottles from 0 to 100 Correct representation of costs for 0 to 100 bottles	B1 B2	Allow for cost axis • starting from £10 • final label is £100 (rather than £110 or £120) • suitable for 'their plotted points' with increasing costs for increasing number of bottles With no incorrect points plotted Joined with dotted or solid straight line Ignore any additional 'correct' points plotted for more than 100 bottles Examples of points: Bottles 0 20 40 60 80 100 Costs £ 10 30 50 70 90 110 B1 for any one of: • One incorrect plot, that is not (0, 10), on an otherwise correct graph. (0,10) must be plotted and joined • correct graph for an inclusive range of 50 bottles • at least 2 correct points plotted, with no incorrect points plotted, ignore vertical lines or 'line of best fit'. Allow for points not joined Note: the drawing of a bar chart should only be awarded B1 maximum for the uniform scales
11(b) $1750 \div 1.75$ or $1750 \times 4/7$ or $1750 \div 7/4$ + 10 £1010	M1 m1 A1	Allow sight of 1000 provided not from incorrect working (not for 1 litre = 1000 ml) If no marks, award SC1 for sight of '÷ 1.75' or '÷ 7/4' or '× 4/7' or equivalent
12. (Width of small sticker is) $42 \div 14$ 3 (cm) (Length or width of large sticker) 4×14 OR 4×3 56 (cm) AND 12 (cm)	M1 A1 M1 A1	Must be for the small label (check the diagram) FT 'their $42 \div 14$' (Note: Incorrect logic $42 \times 4 = 168$ with $168 \div 56 = 3$ does not give the width of the small label! M0 A0)
12. Alternative method: *(Area of large sticker) 42×4^2 $(= 672cm^2)$* *(Length of large sticker) 14×4 $(= 56cm)$* *(Width of large sticker)* $\frac{42 \times 4^2}{14 \times 4}$ *or* $\frac{672}{56}$ *(Length and width of large sticker)* *56 (cm) AND 12 (cm)*	*M1* *M1* *M1* *A1*	

13(a)(i) Answer in the range 46 to 48 (cm)	B1	
13(a)(ii) 5 (ray fish)	B1	
13(b)(i) Correct format of a box-and-whisker with at least one of minimum, LQ, median, UQ or maximum correct Showing: Minimum: 1.6 (cm); LQ: 2.4 (cm); Median: 3.2 (cm) UQ at 5.8 (cm) Maximum at 6.8 (cm)	B1 B1 B1 B1	Do not ignore additional lines drawn Do not accept minimum of 0cm or maximum of 7cm End vertical stopper lines omitted can be ignored Must all be shown on the diagram/graph Do not accept plotted points for LQ and median, must be intention to draw lines Must be intention of the minimum, LQ and median, for the median ignore 1 spurious line also drawn Must be shown on the diagram/graph Must be shown on the diagram/graph If no marks for both UQ and maximum, allow SC1 for sight of UQ as 5.8 (cm) or maximum 6.8 (cm) in working
13(b)(ii) 0.75×60 or equivalent 45 (guppies)	M1 A1	 If no marks, award SC1 for an answer of 15 (guppies) or for sight of 75% or ¾
13(c) $100 \times 9.9 \div (100 + 10)$ or $9.9 \div 1.1$ or equivalent 9 (kg)	M1 A1	Allow 9.9 – 0.9 provided 0.9 is not from incorrect working CAO. Must be from a correct method Allow unsupported 9 (kg) for M1, A1