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# **GCSE MARKING SCHEME**

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**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

## SUMMER 2022 MARKING SCHEME

Unit 2: Foundation Tier	Mark	Comments
1(a) (£)9.30 ÷ 5  <span style="float: right;">(£)1.86 or 186(p)</span>	M1 A1	Sight of the digits 186 gains M1 If units are given they must be correct
1(b) ((£)13.80 – (£)9.30) ÷ 2  <span style="float: right;">(£)2.25 or 225 (p)</span>	M1 A1	Sight of the digits 225 gains M1 FT use of 5 × 'their (£)1.86' stated in (a) instead of (£)9.30 If units are given they must be correct
2(a) 6 (°C)	B1	Accept -6 (°C) Answer may be embedded within a sentence
2(b) <span style="float: right;">4-star</span>	B1	
2(c) <b>No</b> and suitable reason given relating to time of 3 star and 4 star freezers being different e.g.  'For 6 months, she needs a 4-star freezer'. 'because the 4 star means you can store food for longer (than 3 months)' 'because June to December is more than 3 months' 'because 3 stars is not long enough' 'need longer than 3 months' 'needs 3 months or longer' 'need from June to December which is 6 months' 'because the food won't last until December'	E1	Allow: 'No because from June to December is 7 months' 'No because from June to December is 5 months'  Do not allow: 'No, because they are the same temperature' 'No because June to December is 4 months' i.e., reference to the incorrect number of months. 'No because the food will go off and you will have to throw it away'
3(a) Cuddly toy	B1	Allow cuddly toy and 12 given together B0 for 12 alone
3(b) <b>No</b> and reason given e.g.  'The frequencies would all need to be the same for an equal chance' 'no as it seems that there are more cuddly toys than anything else' 'There aren't equal numbers of each prize' 'more of some prizes than others' 'numbers are not equal' 'different number of prizes' 'not equal to each other' 'different amounts of different prizes' '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' 'less of certain prizes'	E1	Ignore additional spurious or incorrect statements for accepted and allowed responses  Allow 'different amounts available' 'different amount of stock for the prizes' 'there's only 5 books, 9 boxes of chocolates and there are 12 cuddly toys' 'there's 12 cuddly toys and 2 photo frames' (comparison of any 2 or more) 'more prizes than others'  Do not allow 'there are only 2 photo frames' (with nothing else said – no comparison with any other prize) 'different prizes'

<p>3(c) (Cost of prizes without discount)  <math>9 \times 1.80 + 12 \times 2.30 + 5 \times 3.20 + 2 \times 4.70</math>  <math>(16.20 + 27.60 + 16 + 9.40)</math></p> <p style="text-align: right;">(£)69.2(0)</p> <p>(Discount) (£)6.92</p> <p>(Cost of prizes with discount) (£)69.2(0) – (£)6.92</p> <p style="text-align: right;">(£)62.28</p>	<p>M2</p> <p>A1</p> <p>B1</p> <p>M1</p> <p>A1</p>	<p>May be seen in stages  Award M1 for:</p> <ul style="list-style-type: none"> <li>• the sum of 3 correct products</li> <li>• sight of all 4 correct products (even if not added)</li> </ul> <p>CAO</p> <p>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.</p> <p>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%</p>
<p><u>3(c) Alternative method 1</u>  (10% discount for each prize) (£)0.18 or (£)0.23 or (£)0.32 or (£)0.47</p> <p>Correct cost of all reductions 1.62 AND 2.07 AND 2.88 AND 4.23</p> <p><math>9 \times 1.62 + 12 \times 2.07 + 5 \times 2.88 + 2 \times 4.23</math>  <math>(£14.58 + £24.84 + £14.40 + £8.46)</math></p> <p style="text-align: right;">(£)62.28</p>	<p>B1</p> <p>B2</p> <p>M2</p> <p>A1</p>	<p>Accept 18(p) or 23(p) or 32(p) or 47(p).  If units stated, they must be correct</p> <p>Award B1 for any one correct reduction</p> <p>FT from B1, B1  Award M1 for the sum of 3 correct products</p>
<p><u>3(c) Alternative method 2</u>  (10% discount for each prize) (£)0.18 or (£)0.23 or (£)0.32 or (£)0.47</p> <p>(Total discount)  <math>9 \times (£)0.18 + 12 \times (£)0.23 + 5 \times (£)0.32 + 2 \times (£)0.47</math>  <math>(£1.62 + £2.76 + £1.60 + £0.94)</math></p> <p>(Total discount) (£)6.92</p> <p>(Cost of prizes with discount) (£)69.2(0) – (£)6.92  (£)62.28</p>	<p>B1</p> <p>M2</p> <p>A1</p> <p>M1</p> <p>A1</p>	<p>Accept 18(p) or 23(p) or 32(p) or 47(p).  If units stated, they must be correct</p> <p>FT 'their (£)0.18 or (£)0.23 or (£)0.32 or (£)0.47'  Award M1 for the sum of 3 correct products</p> <p>CAO</p> <p>FT 'their (£)69.2(0)' – 'their (£)6.92</p>
<p>Organisation and communication</p> <p>Writing</p>	<p>OC1</p> <p>W1</p>	<p>For OC1, candidates will be expected to:</p> <ul style="list-style-type: none"> <li>• present their response in a structured way</li> <li>• explain to the reader what they are doing at each step of their response</li> <li>• lay out their explanations and working in a way that is clear and logical</li> <li>• write a conclusion that draws together their results and explains what their answer means</li> </ul> <p>For W1, candidates will be expected to:</p> <ul style="list-style-type: none"> <li>• show all their working</li> <li>• make few, if any, errors in spelling, punctuation and grammar</li> <li>• use correct mathematical form in their working</li> <li>• use appropriate terminology, units, etc.</li> </ul>

<p>4. Evidence of counting squares Number of squares 11 – 16 (squares or cm<sup>2</sup>)</p> <p>(Area = 'Their number of squares' × 0.5 m<sup>2</sup> =) 5.5 – 8 (m<sup>2</sup>)</p> <p>(Cost of glass=) 'their area' × (£)290</p> <p>Correct answer</p>	<p>M1 A1</p> <p>B1</p> <p>M1 A1</p>	<p>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</p> <p>FT 'Their number of squares' × 0.5 (m<sup>2</sup>) or 'Their number of squares' ÷ 2 (m<sup>2</sup>) This B1 may be seen at the end eg 12 × 290 ÷ 2</p> <p>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</p> <p>FT 'their area' × (£)290 provided M1 or B1 previously awarded Allow rounded value of (£)300 used for (£)290</p> <p>Note: check if 290 has been ÷ 2 rather than number of squares ÷ 2 Check 145 × number of squares</p>								
<p>5. Showing (47%), <b>20%</b>, (5%), <b>3%</b> and <b>25%</b> OR <b>0.47</b>, (0.2), <b>0.05</b>, (0.03) and <b>0.25</b> OR 47/100, 20/100, 5/100, 3/100 and 25/100 OR five correct calculations for a common amount</p> <table border="1"> <tr> <td></td> <td style="text-align: center;"><b>Ocean</b></td> </tr> <tr> <td rowspan="5" style="text-align: center; vertical-align: middle;"> <p><b>Largest</b></p> <p>↓</p> <p><b>Smallest</b></p> </td> <td style="text-align: center;"><b>Pacific (47%)</b></td> </tr> <tr> <td style="text-align: center;">Atlantic (¼)</td> </tr> <tr> <td style="text-align: center;">Indian (0.2)</td> </tr> <tr> <td style="text-align: center;">Southern (5%)</td> </tr> <tr> <td style="text-align: center;">Arctic (0.03)</td> </tr> </table>		<b>Ocean</b>	<p><b>Largest</b></p> <p>↓</p> <p><b>Smallest</b></p>	<b>Pacific (47%)</b>	Atlantic (¼)	Indian (0.2)	Southern (5%)	Arctic (0.03)	<p>B2</p> <p>B1</p>	<p>Look at the given table for some equivalent values B2 for all correct % OR all correct decimals OR all correct fractions <u>with a common denominator</u> OR correct work using a common amount OR a valid combination that allows full comparison</p> <p>Award B1 for any 2 correct conversions</p> <p>Allow any unambiguous indication (e.g. 'converted values'). <b>Strict FT</b> of 'their work' if at least B1 gained.</p> <p>Correct answer (either oceans or proportions) with <u>no</u> other marks awarded, gains final B1.</p>
	<b>Ocean</b>									
<p><b>Largest</b></p> <p>↓</p> <p><b>Smallest</b></p>	<b>Pacific (47%)</b>									
	Atlantic (¼)									
	Indian (0.2)									
	Southern (5%)									
	Arctic (0.03)									

<p>6(a).  <math>(5 \times 30 + 4) \times 4</math>    or    <math>20 \times 30 + 4 \times 4</math>  <math>(154 \times 4)</math>            or    <math>(600 + 16)</math></p> <p>616 (cm)</p> <p>6.16 (metres)</p>	<p>M2</p> <p>A1</p> <p>A1</p>	<p>Look at diagram  May be seen in stages  Award M1 for sight of:</p> <ul style="list-style-type: none"> <li>• <math>(5 \times 30) \times 4 (=600)</math></li> <li>• <math>5 \times 30 + 4 (=154)</math></li> <li>• <math>(5 \times 30) \times 4 + \text{multiple } 4 (\leq 20)</math></li> </ul> <p>FT for 'their perimeter' provided at least M1 awarded AND 4 sides considered</p> <ul style="list-style-type: none"> <li>• 600</li> <li>• <math>600 + \text{multiple } 4 (\leq 20)</math> correctly evaluated</li> </ul> <p>Eg <math>(5 \times 30) \times 4 = 600</math> gains M1 A1</p> <p>FT 'their perimeter' for correct conversion to metres provided at least M1 awarded</p> <p>Eg A final answer of 6(m) gains M1 A1 A1</p> <p>If no marks awarded, award SC1 for sight of</p> <ul style="list-style-type: none"> <li>• 16(cm) or 0.16(m)</li> <li>• 150(cm) or 1.5(m)</li> </ul>
<p>6(b) <math>1.3 \times 0.4</math>    or    <math>130 \times 40</math></p> <p>0.52            or    5200</p> <p><math>\text{m}^2</math>            or    <math>\text{cm}^2</math></p>	<p>M1</p> <p>A1</p> <p>U1</p>	<p>Must be only the correct method but allow if <math>\times/\div</math> by power of 10</p> <p>Mark final answer  Allow 0.5 provided no incorrect working seen</p> <p>Correct units for 'their area'</p> <p>Eg <math>1.3 \times 0.4 = 0.52</math>  <math>0.52 \times 100 = 52 \text{ cm}^2</math>  Award M1 A0 U1 (attempt to change to <math>\text{cm}^2</math>)</p>
<p>7(a) 1 (km)</p>	<p>B1</p>	
<p>7(b) 7½ hours</p>	<p>B1</p>	
<p>7(c) 5 (km)</p>	<p>B1</p>	
<p>8(a) (Breakfast recommendation is) <math>0.35 \times 2400</math>  or <math>240 + 240 + 240 + \frac{1}{2}</math> of 240  or <math>2400 - 0.65 \times 2400</math> or equivalent</p> <p>(Difference in calories)            <math>860 - 0.35 \times 2400</math></p> <p style="text-align: right;">20 (calories)</p>	<p>M1</p> <p>M1</p> <p>A1</p>	<p>(= 840) May be seen in stages  35% of 2400 without further working is awarded M0  Sight of <math>240 + 240 + 240 + 24</math> is awarded M0</p> <p>Allow <math>0.35 \times 2400 - 860</math> for M1  FT <math>860 -</math> 'their derived 840' irrespective of how 'their 840' was derived</p> <p>CAO. Answer of -20 (calories) is A0  Allow incorrect units seen, e.g. 20%</p>
<p><i>8(a) Alternative method</i>  (Difference in calories) <math>(860 \div 2400 - 0.35) \times 2400</math>  20 (calories)</p>	<p>M2</p> <p>A1</p>	<p>M1 for <math>860 \div 2400 - 0.35</math>  CAO. Allow incorrect units seen, e.g. 20%</p>
<p>8(b) 23 : 5</p>	<p>B1</p>	<p>Must be whole numbers, mark final answer  Allow 23g : 5g</p>



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' <b>with</b> 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 show all the temperature changes', 'doesn't give the same accuracy (as the first graph)', 'doesn'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'