



GCSE MARKING SCHEME

SUMMER 2022

**GCSE
MATHEMATICS
UNIT 1 – FOUNDATION TIER
3300U10-1**

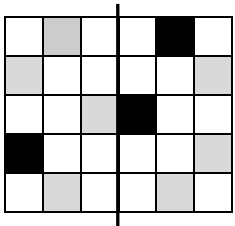
INTRODUCTION

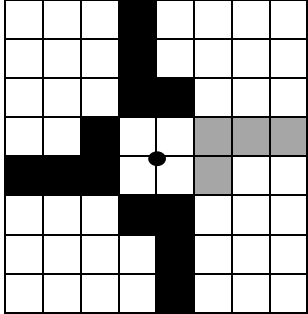
This marking scheme was used by WJEC for the 2022 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' 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.

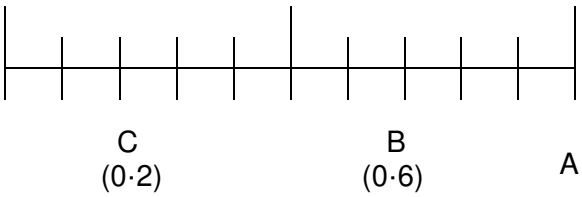
It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

WJEC GCSE MATHEMATICS
SUMMER 2022 MARKING SCHEME

Unit 1: Foundation Tier	Mark	Comments
1. (a) 2380	B1	
1. (b) 9615	B1	
1. (c) 67	B1	
1. (d) 378	B1	
1. (e) 1257	B1	
2. (a) unlikely	B1	
2. (b) an even chance	B1	
3. 	B1	
4. (a) ($x =$) 54°	B1	Accept 52° to 56°
4. (b) Angle of 147° drawn at B	B1	Accept 145° to 149°
5.(a) 5 hours 45 minutes OR $5\frac{3}{4}$ hours OR 345 mins	B1	Allow incorrect notation, e.g. 5:45 or 5.45
5.(b) 6 small triangles shaded	B1	
6. (Diameter of the larger circle= $) 4 \times 7.5$ (cm) $= 30$ (cm)	M1 A1	May be seen in parts.
Accuracy of Writing Show all their working which must be in correct mathematical form Include units in the answer	W1	For W1, candidates will be expected to: <ul style="list-style-type: none"> • 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.
7.(a) 3a	B1	
7.(b)(i) ($y=$) 63	B1	Accept embedded answer
7.(b)(ii) ($x=$) 12	B1	Accept embedded answer
7 (c) 6	B1	

<p>8. $(2.2 \text{ lb} =) 1 \text{ (kg)}$ 9.48 (kg)</p>	<p>B1 B2</p>	<p>B1 for sight of $5.4 + 3.08 + 1$ OR B1 for $5.4 + 3.08 +$ 'their 1' evaluated accurately OR B1 for an answer of 10.68 B3 for answer alone of 9.48 (kg)</p>
<p>9.</p> 	<p>B2</p>	<p>B1 for 3 parts correct but incorrect shape(s) also drawn OR B1 for 1 or 2 parts correct where incorrect shapes may also be drawn</p>
<p>10. $4000 \text{ ml} = 4 \text{ litres}$ OR $2.5 \text{ litres} = 2500 \text{ ml}$ OR $17 \text{ litres} = 17000 \text{ ml}$</p> <p>A complete and correct strategy that leads to the correct answer, e.g. $3 \times 4 + 2 \times 2.5 = 17$ OR Strategy to test at least two different combinations of jugs and buckets, e.g. $4 + 4 + 2.5$ and $4 + 2.5 + 2.5$ OR Strategy to test at least two different combinations of tank and jugs (or buckets), e.g. $17 - 2.5 - 2.5$ and $17 - 4 - 4$ OR At least one of each strategy.</p> <p>Number of buckets = 3 AND number of jugs = 2</p>	<p>B1 S2 B1</p>	<p>Seen or implied in working</p> <p>The numbers of jugs/buckets may be seen or implied e.g. $4 + 4 + 4 + 4 + 2.5 (= 18.5)$ Allow use of 'their 2500 ml' or 'their 4 litres' or 'their 17000 ml'</p> <p>S1 for one combination of jugs and buckets OR one combination of tank and jugs/buckets OR a multiple of jugs or buckets Each mixed strategy must include at least one of each container.</p> <p>CAO Must be from a correct 4 litre or 2500 ml AND 17000 ml. Crossed-out working can be included in consideration of strategies. An unsupported answer of buckets = 3 AND jugs = 2 gains 4 marks</p>
<p>Organisation and Communication The steps of the answer must be labelled so that it is clear what the calculations are working out. No final conclusion is necessary as there is an answer space.</p>	<p>OC1</p>	<p>For OC1, candidates will be expected to:</p> <ul style="list-style-type: none"> • present their response in a structured way • explain to the reader what they are doing at each step of their response • lay out their explanation and working in a way that is clear and logical • write a conclusion that draws together their results and explains what their answer means

<p>11.</p> 	<p>B1 B1 B1</p>	<p>A marked at 1 B marked at 0.6 (accept 0.55 to 0.65 exclusive) C marked at 0.2 (accept 0.15 to 0.25 exclusive)</p>
<p>12. (a) 72</p>	<p>B2</p>	<p>B1 for an appropriate sight of 9 or 8.</p>
<p>12. (b) -31</p>	<p>B1</p>	
<p>12. (c) 42 ISW</p>	<p>B1</p>	<p>Allow 42.0</p>
<p>13. Showing 30% (31%), and 32% OR 30/100, 31/100 and 32/100 OR (0.3), 0.31 and 0.32 OR three correct calculations for a common amount. 0.3 31%, 8/25 in order</p>	<p>B2 B1</p>	<p>B2 for all correct %, OR all correct fractions <u>with a common denominator</u>, OR all correct decimals, OR correct work using a common amount, OR a valid combination that allows full comparison. B1 for one correct conversion or two correct calculations for a common amount. Allow any unambiguous indication (e.g. 'converted' values.) Strict FT of 'their work' if at least B1 gained. Correct answer, with <u>no</u> other marks awarded, gains final B1 only.</p>
<p>14.</p> <p>equivalent $360 - 90 - 220$ or</p> <p>50° =</p> <p>(x =) $(180 - 50) \div 2$ or equivalent</p> <p>=</p> <p>65°</p>	<p>M1 A1 M1 A1</p>	<p><i>Answer line takes precedence.</i> Note: $360 - 310$ or $270 - 220$ or $140 - 90$ Award M1 for complete method or intention of complete method provided not contradicted e.g. brackets missing $360 - 90 + 220$ May be seen in later working May be seen in stages FT $(180 - \text{'their } 50^\circ) \div 2$</p>
<p>14. <u>Alternative method</u></p> <p>(Exterior angle = sum of the two opposite interior angles =) $220 - 90 (=)$ 130°</p> <p>equivalent (x =) $130 \div 2$ or</p> <p>=</p> <p>65°</p>	<p>B1 M2 A1</p>	<p><i>Answer line takes precedence.</i> FT (their '220 - 90') $\div 2$</p>

<p>15. (a) Any n, as a whole number, which results in $7n - 9$ being a multiple of 4</p>	B2	<p>Answer space takes precedence and must not be from incorrect working. Do not ignore crossed-out work for this question. Award B1 for any one of:</p> <ul style="list-style-type: none"> any 2 correctly evaluated terms in the sequence $7n - 9$ (i.e. not leading to, or not recognised as leading to, a multiple of 4 for their choice of n) or setting up an equation $7n - 9 = 4 \times k$ (where $k \geq 1$ and a whole number) and attempt to solve a correct value of n substituted in $7n - 9$, but contradiction or no answer given on answer line (e.g. $7 \times 3 - 9 = 12$ and 12 written on answer line or answer line left blank) <table border="1"> <tbody> <tr> <td>n</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>.....</td> </tr> <tr> <td>$7n - 9$</td><td>-2</td><td>5</td><td>12</td><td>19</td><td>26</td><td>33</td><td>40</td><td>47</td><td>54</td><td>61</td><td>68</td><td>.....</td> </tr> </tbody> </table> <p>Note: Award B0 for a correct value of n from incorrect working e.g. if $7 \times 4 - 9 = 19$, then $n = 19$ on the answer line.</p>	n	1	2	3	4	5	6	7	8	9	10	11	$7n - 9$	-2	5	12	19	26	33	40	47	54	61	68
n	1	2	3	4	5	6	7	8	9	10	11																
$7n - 9$	-2	5	12	19	26	33	40	47	54	61	68																
<p>15. (b) Any n, as a whole number, which results in $3n - 5$ being a prime number</p>	B2	<p>Answer space takes precedence and must not be from incorrect working. Do not ignore crossed-out work for this question. Award B1 for any one of:</p> <ul style="list-style-type: none"> any 2 correctly evaluated terms in the sequence $3n - 5$ (i.e. not leading to, or not recognised as leading to, a prime number for their choice of n) or setting up an equation $3n - 5 = \text{a prime number}$ and attempt to solve a correct value of n substituted in $3n - 5$, but contradiction or no answer given on answer line (e.g. $3 \times 4 - 5 = 7$ and 7 written on answer line or answer line left blank) a correct value of n substituted in $3n - 5$, but n contradicted for their workings (but n still leads to a prime number) given on answer line (e.g. $3 \times 4 - 5 = 7$ and 12 written on answer line or answer line left blank). <table border="1"> <tbody> <tr> <td>n</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>.....</td> </tr> <tr> <td>$3n - 5$</td><td>-2</td><td>1</td><td>4</td><td>7</td><td>10</td><td>13</td><td>16</td><td>19</td><td>22</td><td>25</td><td>28</td><td>.....</td> </tr> </tbody> </table> <p>Note: Award B0 for a correct value of n from incorrect working e.g. if $3 \times 4 - 5 = 13$, then $n = 13$ on the answer line.</p>	n	1	2	3	4	5	6	7	8	9	10	11	$3n - 5$	-2	1	4	7	10	13	16	19	22	25	28
n	1	2	3	4	5	6	7	8	9	10	11																
$3n - 5$	-2	1	4	7	10	13	16	19	22	25	28																
<p>16. (a) $(P(\text{green or yellow}) =) 0.7$ or equivalent $(P(\text{yellow}) =) 0.35$ or equivalent ISW</p>	B1 B1	<p>FT 'their 0.7' $\div 2$, provided not 0.3 and less than 1</p> <p>If no marks awarded, award SC1 for $P(\text{red}) + P(\text{green}) + P(\text{yellow}) = 1$</p>																										
<p>16. (b) Any valid explanation e.g. "as there are 10 balls, the only possible probabilities are 0.1, 0.2, 0.3 etc" "you can't have) 2.5 balls" "a quarter of 10 is not a whole number" "0.25 of 10 = 2.5, you can't have half a ball" "10 is not divisible by 4"</p>	E1	<p>Accept "you can't have half a ball". Allow sight of 2.5 for E1.</p> <p>Do not accept incomplete explanations e.g. "we don't know how many blue (or white) balls there are".</p>																										

<p>17.</p> $8x + 3x = 17 + 38 \quad \text{OR} \quad -17 - 38 = -8x$ $-3x$ $11x = 55 \quad \text{OR} \quad -55 = -11x$ $x = 5$	<p>B1 B1 B1</p>	<p>FT until 2nd error.</p> <p>Mark final answer. If FT leads to a whole number answer, it must be shown as a whole number. Otherwise, accept a fraction. Allow B1B1B1 for a correct embedded answer BUT only B1B1B0 if contradicted by $x \neq 5$</p>
<p>18.</p> <p>(Area of rectangle) $48 = 8 \times x$ (width of rectangle, $x = 48/8 =$) 6 (m)</p> <p>(Area of trapezium $=$) $\frac{(5 + 9) \times (6 \times 2)}{2}$ or equivalent</p> $= 84 \text{ (m}^2\text{)}$	<p>M1 A1 M1 A1</p>	<p><i>Lengths may be shown on the diagrams.</i></p> <p>Allow an embedded 6 e.g. $8 \times 6 = 48$ for M1A1.</p> <p>Sight of 12(m) implies the previous M1A1. FT 'their stated x' $\times 2$. Allow M1 for correct intent <u>seen</u>. e.g. $5 + 9 \times 12 \div 2$</p>
<p>19.</p> <p>7, 7, 10, 12 (in any order)</p>	<p>B3</p>	<p><i>Numbers shown in number boxes take precedence.</i></p> <p>The four conditions:</p> <ul style="list-style-type: none"> • All numbers between 1 and 15 inclusive. • Unique mode = 7. • Median = 8.5. • Total = 36. <p>B2 for three conditions met. B1 for two conditions met.</p> <p>FOUR numbers must be shown, otherwise B0. Award B1 only for 7, 7,10,10 OR 7, 7,11,11 (not a unique mode).</p>