



GCSE MARKING SCHEME

AUTUMN 2021

**GCSE
MATHEMATICS – COMPONENT 1
(FOUNDATION TIER)
C300U10-1**

INTRODUCTION

This marking scheme was used by WJEC for the 2021 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.

EDUQAS GCSE MATHEMATICS

AUTUMN 2021 MARK SCHEME

GCSE (9-1) Mathematics Component 1: Foundation Tier	Mark	Comment
1.(a)(i) 16	B1	
1.(a)(ii) 2	B1	
1.(b)(i) 505	B1	
1.(b)(ii) 4.5	B1	Allow trailing zeros e.g. 4.50
1.(c) $\frac{17}{100}$	B1	Accept 17/100; ignore correct equivalent fractions but do not ignore e.g. a change to a decimal or rewriting as an incorrect fraction such as 1/17
1.(d) 0.03, 0, -2, -5	B1	
1.(e) 20	B2	B1 for $\frac{40}{2}$ or $\frac{240}{12}$ oe, si
	(8)	
2.(a) 20	B1	
2.(b)(i) 0.1 indicated	B2	B1 for sight of $\frac{12}{120}$ oe; allow for 12 out of 120 or $12 \div 120$ or $12 : 120$ or 12 in 120
2.(b)(ii) $\frac{1}{3}$	B2	B1 for sight of $\frac{40}{120}$ or any fraction equivalent to $\frac{1}{3}$ or for $\frac{1}{3}$ seen and then spoiled or for a correct probability in lowest terms, incorrectly expressed e.g. 1 in 3, 1 out of 3, 1 : 3 or for a fraction less than 1 with either numerator of 40 or denominator of 120 then simplified to lowest terms
	(5)	
3.(a) $3x = 6$ indicated and no extras	B1	
3.(b) $4n$ indicated and no extras	B1	
	(2)	

<p>4.</p> $\frac{50}{100} \times 24 \times 30 + 25 \text{ oe}$ <p>(£)385(.00)</p> 30×13 <p>(£)390(.00)</p> <p>Supadeal Carpets and £5</p>	<p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>A1</p>	<p>May be in stages</p> <p>A1 May also be awarded for comparison of $30 \times 13 = 30 \times 12 + 30$ and $30 \times 12 + 25$</p> <p>FT 'their 390 – 385' and 'their Supadeal Carpets' provided at least M1 earned</p> <p>If no marks, award SC1 for $24 \times 30 = 720$ or $24 \times 30 + 25$ or 12×30 or 360 seen</p>

<p>5</p> <p>$a = 30$</p> <p>$b = 120$</p> <p>$c = 360 - 85 - 90 - 120 \text{ oe}$</p> <p>$c = 65$</p>	<p>B1</p> <p>B1</p> <p>M1</p> <p>A1</p>	<p>Angles may be marked on diagram</p> <p>FT 'their b' providing $their\ b < 185$; may be in stages;</p> <p>FT 185 – 'their b' providing $their\ b < 185$; not from clearly wrong working</p> <p>If no marks, award SC1 for at least one of the angles of PQR marked or implied as 60 with no angle marked as an incorrect value</p>

<p>6.(a)</p> <p>$(-4, 1)$</p>	<p>B1</p>	
<p>6.(b)(i)</p> <p>C correctly marked at $(1, 7)$</p>	<p>B2</p>	<p>Mark intent; may be unlabelled</p> <p>B1 for a point that would result in a triangle and that satisfies one of the properties e.g. $(1, n)$ where $n \neq 7$</p> <p>If no marks, award SC1 for a point at $(4, 7)$.</p>
<p>6.(b)(ii)</p> <p>F correctly marked at $(-4, 7)$</p>	<p>B1</p>	<p>STRICT FT 'their C'; mark intent; may be unlabelled</p> <p>Allow $(-7, 7)$ or correct FT of $(-7, \text{their } 7)$</p>

(4)		

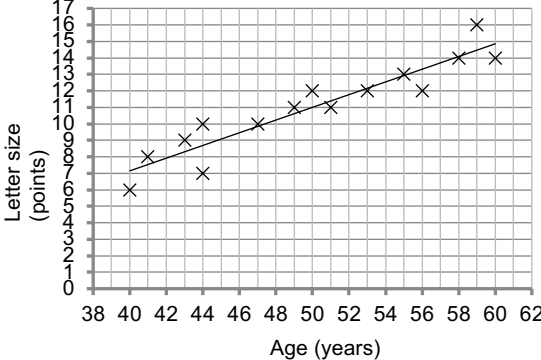
7.(a) <table border="1" style="margin-left: 100px; margin-top: 20px;"> <tr><td></td><td></td><td>12</td></tr> <tr><td></td><td>12</td><td>14</td></tr> <tr><td>14</td><td>16</td><td>18</td></tr> </table>			12		12	14	14	16	18	B1	
		12									
	12	14									
14	16	18									
7.(b) $\frac{7}{16}$	B2	FT 'their table' for 7 but denominator must be 16; ignore attempts to convert to an alternative form e.g. a percentage or to simplify the fraction; for B2 or B1 ignore embellishments such as unlikely etc if also stated B1 FT for a numerator of 7 or 'their 7' or for a denominator of 16 in a fraction less than 1; ignore attempts to cancel or convert to an alternative form but must otherwise be their final answer or for $1 - \frac{9}{16}$ or for a correct probability incorrectly expressed e.g. 7 in 16, 7 out of 16, 7 : 16									
(3)											
8.(a)(i) $3 \times (4 + 1) \times 2 = 30$	B1										
8.(a)(ii) $(50 - 36) \div 2 \times 3 = 21$	B1										
8.(b) No and valid supporting evidence e.g. '(40 - 30) ² is about 100' or '41 - 29.5 = 11.5 ≈ 12 so it is about 144' or '11 ² is 121'	E2	Allow e.g. 'No and the answer is about 100' for 2 marks E1 for No and partial evidence which includes both the difference and squaring e.g. sight of (40 - 30) ² or '41 - 29.5 = 11.5 and 11.5 ² is a lot less than 700.' NB if 'yes' is indicated then E0									
(4)											
9.(a)(i) 45	B1										
9.(a)(ii) $14x + 3$	B2	Mark final answer B1 for sight of a correct expression e.g. $2x \times 7 + 3$									
9.(b) Divide by 10 or ÷10 or multiply by $\frac{1}{10}$ or $\times \frac{1}{10}$ oe	B1	If number machine blank check working underneath but number machine takes precedence									
(4)											
10.(a) $(3 \times 8) \div 2$ oe, si	M1	May be in stages									
12 (minutes)	A1	If no marks, award SC1 for sight of 24 (minutes)									
10.(b) $(31 - 5) \div 4$ oe, si	M1	May be in stages; the division by 4 may be implied by repeated subtraction or addition but they must be trying to make whatever they think the answer to 31 - 5 is and must indicate that 2 is half of 4									
6.5 (cm)	A1	Allow an embedded answer $4 \times 6.5 + 5$ as long as it is not contradicted									
(4)											

11.(a) 12 (years)	B1	
11.(b) (4000 ÷ 5 =) 800 si or $\frac{20000 \times r \times 5}{100} = 4000$ si or $\frac{4000}{20000} \times 100 (= 20\%)$ si 4 (%)	B1 B2	<p>Implies 3 marks; allow if 4% is clearly their answer in the working and the answer line is blank</p> <p>B1 for sight of $\frac{\text{their } 800}{20000}$ or $1000 \times r = 4000$ oe or $20(\%) \div 5$ or stating 1% (of 20000) = 200 and attempting to build up to 'their 800'</p>
	(4)	
12.(a) (Double plus rooms =) $160 + \frac{3}{4} \times 160$ (£) 280.00 (Family room =) $80 \times 3 + 12$ (£)252(.00) (£)28(.00)	M1 A1 M1 A1 B1	<p>oe; may be embedded</p> <p>implied by correct answer</p> <p>oe; may be embedded</p> <p>implied by correct answer</p> <p>FT double plus cost – family room cost = 'their 280' – 'their 252' provided at least M1 previously awarded.</p> <p>Common FT answer is $320 - 252 = 68$</p> <p>Treat consistently using the wrong row of the table as a misread</p>

<p>12.(b)(i) 23:05 or 11 05 (pm)</p>	<p>B2</p>	<p>Allow for 23:05 pm</p> <p>B1 for attempting to add 8 hours 10 minutes to 14:55; implied by e.g. 22: 65 or for 11 05 am</p>
<p>12.(b)(ii) 15 h 20 min less 11 h 5 min plus 5 h 30 min e.g. 4 15 plus 5 30 or 20 50 less 11 05 or 15 20 less 5 35</p> <p>9h 45 min oe</p>	<p>M2</p> <p>A1</p>	<p>si; may be in steps; allow poor use of notation</p> <p>M1 for 15 h 20 min less 11 h 5 min (= 4 h 15 min) or for 15:20 plus 5 h 30 min (= 20:50) or for 11:05 less 5 h 30 min (= 05:35)</p> <p>not from wrong working; mark final answer</p>
<p>12.(b)(iii) Valid comment about the duration of the flight e.g. 'It was less than expected' or 'The flight took less than 9 h 45 min'</p>	<p>E1</p>	<p>There must be no contradictions for E1 but ignore irrelevant comments</p> <p>Allow '< 9 45' or 'It will make the journey more than 10 minutes shorter.'</p> <p>Do not allow 'It will arrive earlier' or 'It will be behind schedule.' or answers that specify exactly how long the flight would have been as this cannot be determined</p>
<p>(11)</p>		
<p>13.(a)(i) Indication of bearing $015^\circ \pm 2^\circ$ from <i>C</i></p> <p>Indication of bearing $320^\circ \pm 2^\circ$ from <i>F</i></p> <p>Both bearings correct and position of Don's house indicated</p>	<p>B1</p> <p>B1</p> <p>B1</p>	<p>Position may be implied by intersection of straight lines for bearings</p>
<p>13.(a)(ii) 8000 (m) oe</p>	<p>B2</p>	<p>STRICT FT 'their <i>DB</i> in cm' $\times 1000$ Tolerance $\pm 2\text{mm}$;</p> <p>B1 STRICT FT for 'their <i>DB</i> in cm' or for a correct evaluation of '<i>their DB</i> measured to $\pm 5\text{mm}$' $\times 1000$</p>

<p>13.(b) (Working time =) 6 hours si 9 trips (in 6 hours) si or 48 people in 2 hours si 9 × 16 or 48 + 48 + 48 oe</p>	<p>B1 B1 M1</p>	<p>May be implied by e.g. 3 lots of 2 hrs from 10 am to 4pm FT 'their derived 9' × 16 si or ('their 3 × 16') × ('their derived 6' ÷ 2) si or ('their 3 × 16') × ('their sets of 3 trips' in a day) si if correct, implies B1 B1; M1 is not implied by a wrong value without method seen</p>
<p>144</p>	<p>A1 (9)</p>	<p>CAO</p>
<p>14.(a) Q indicated and a valid explanation e.g. 'Line Q is not as steep as line P.' or 'A bike should be quicker than walking.'</p>	<p>E1</p>	<p>Must not contain incorrect comments but ignore irrelevant comments Allow e.g. Q indicated and 'Nicky took longer' Do not allow e.g. 'Alf was on a bicycle' only</p>
<p>14.(b)(i) 3 correct lines drawn: (15 40, 0) to (15 45, 0.5) (15 45, 0.5) to (15 57, 0.5) (15 57, 0.5) to (16 00, 1.5)</p>	<p>B3</p>	<p>Accept freehand lines, dashed lines or curves joining points for full marks for part marks (speed is not necessarily constant so lines do not have to be ruled, although they may be); ignore a horizontal line from (15 30, 0) to (15 40, 0) Ends of lines must be within ½ a square radially of where they should be B1 for the line joining (15 40, 0) to (15 45, 0.5) B1FT for ('their 15 45', 'their 0.5') to ('their 15 45'+12, 'their 0.5') B1FT for ('their 15 45+12', 'their 0.5') to ('their 15 40' + 20, 1.5)</p>
<p>14.(b)(ii) 15 (minutes)</p>	<p>B2</p>	<p>B1 for ¼ hour or clear evidence of a correct interpretation of the speed in minutes e.g. 2 km in 60 minutes or 1 km in 30 minutes</p>
<p>14.(b)(iii) Correct line drawn: (16 00, 1.5) to (16 15, 2)</p>	<p>B1</p>	<p>FT ('their 15 40 + 20', 1.5) to ('their 15 40 + 20' + 'their 15 mins', 2); NB not a strict FT of their (b)(ii);</p>
	<p>(7)</p>	

15.(a) $51 \div 8.50$ si 6	M1 A1	May be implied by e.g. a build-up method adding 6 lots of 8.5(0) or $6 \times 8.5(0) = 51(.00)$
15.(b)(i) $12 \times 20 + 9 \times 10$ (£)330(.00)	M1 A1	May be in stages If no marks award SC1 for 240 and 90 seen
15.(b)(ii) $360 \div (4 + 1)$ 72 (72 \div 9 =) 8 (hours)	M1 A1 A1	Ignore any units if stated; may be in ratio 288 : 72 CAO
	(7)	
16. $\left(\frac{1}{3} + \frac{2}{5} =\right) \frac{5}{15} + \frac{6}{15}$ or $\frac{5+6}{15}$ si $\frac{11}{15}$ oe $\frac{33}{11} \times 15$ si or $\frac{11}{15} = \frac{33}{45}$ or $\frac{11}{15} + \frac{4}{15} = 33 + 12$ 45	M1 A1 M1 A1	 FT 'their $\frac{11}{15}$ ', if possible; CAO;
	(4)	

<p>17.* (a) Correct, ruled, single line of best fit drawn, passing through the point (50, 11)</p>	<p>B2</p>	<p>Must have some points above and some points below the line and follow the trend of the data; if more than one line is drawn, mark the worst; must extend at least from age 42 to 58, may be longer but not shorter;</p> <p>For B2 or B1: if a point is plotted at (50, 11) mark clear intent to pass through (50, 11), if no point plotted must pass exactly through this point;</p> <p>B1 for a ruled, single line of best fit with some points above and some points below the line and following the trend of the data and extending at least from age 42 to 58 but not passing through (50, 11) or a ruled, single line of best fit with positive gradient passing through (50, 11) but not fitting criterion for points above and below and/or trend and/or length</p> 
<p>17.(b)(i) Between 11 and 13 inclusive</p>	<p>B1</p>	<p>If not in this range allow FT of 'their line of best fit' providing it is an attempt at a single line, ruled or unruled; allow answers in this range even if no line drawn; allow decimal answers; allow FT values to be rounded or truncated to the nearest integer</p>
<p>17.(b)(ii) No indicated and a valid reason e.g. 'There is no data for 30 years old' or 'Younger people often have better eyesight than older people.'</p>	<p>E1</p>	<p>Any reason that indicates Jared is outside the data set e.g. Accept: 'His age is not on the scatter graph.' Allow: 'The lowest age on the graph is 38' or '30 wasn't listed'.</p> <p>Do not accept 'Different ages, vision can vary between people.' (too vague)</p> <p>Allow extra irrelevant comments providing they are not contradictory.</p>
<p>(4)</p>		

<p>18.* An appropriately worded question with an appropriate set of response options e.g. 'Which method do you use most often to learn about recent national political events?' Social Media Newspaper Radio Other None'</p>	<p>B2</p>	<p>Question must include at least 'recent' or 'national' as well as 'politics' or 'political events' and at least 4 response options, covering a full range of answers, including e.g. 'other' or 'none' B1 for an appropriately worded question or for an appropriate set of response options</p>																																								
(2)																																										
<p>19.*(a) $8\sqrt{7}$</p>	<p>B1</p>	<p>Accept $8\sqrt[3]{7}$ or $8 \times \sqrt{7}$</p>																																								
<p>19.(b) 26</p>	<p>B1</p>																																									
<p>19.(c) 9</p>	<p>B2</p>	<p>final answer; not from wrong working B1 for final answer of 3^2</p>																																								
(4)																																										
<p>20.*</p> <table border="1" data-bbox="178 779 699 1059"> <thead> <tr> <th></th> <th>Sprint</th> <th>Middle</th> <th>Long</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>S</td> <td>14</td> <td>28</td> <td>40</td> <td>82</td> </tr> <tr> <td>J</td> <td>17</td> <td>21</td> <td>5</td> <td>43</td> </tr> <tr> <td>Tot</td> <td></td> <td></td> <td>45</td> <td>125</td> </tr> </tbody> </table> <p>OR</p> <table border="1" data-bbox="178 1120 699 1400"> <thead> <tr> <th></th> <th>Sprint</th> <th>Middle</th> <th>Long</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>S</td> <td>14</td> <td>28</td> <td>40</td> <td>82</td> </tr> <tr> <td>J</td> <td>17</td> <td>21</td> <td>5</td> <td></td> </tr> <tr> <td>Tot</td> <td>31</td> <td>49</td> <td>45</td> <td>125</td> </tr> </tbody> </table> <p>$\frac{21}{125}$</p>		Sprint	Middle	Long	Total	S	14	28	40	82	J	17	21	5	43	Tot			45	125		Sprint	Middle	Long	Total	S	14	28	40	82	J	17	21	5		Tot	31	49	45	125	<p>B4</p>	<p>Mark to the candidate's advantage Award B4 if 21 is in the cell for Junior middle distance runners and there are no incorrect entries in the table OR B2 for the given information correctly placed (shaded cells) or B1 for any 3 of these correct and B2 for the necessary unshaded cells correct or B1 for any 2 of these correct; ignore entries in the empty cells Allow 125 omitted but do not ignore an error if the value written in this cell is wrong B1 FT $\frac{\text{'their derived 21'}}{125}$; denominator must be 125; and in a fraction <1; ignore attempts to convert to other forms e.g. decimal or ratio;</p>
	Sprint	Middle	Long	Total																																						
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(5)																																										
<p>21.*(a)(i) Similar</p>	<p>B1</p>	<p>Allow poor spelling; do not allow proportional</p>																																								
<p>21.(a)(ii) $\frac{5}{2}$ or $2\frac{1}{2}$ or 2.5</p>	<p>B1</p>																																									
<p>21.(b) $\frac{2}{5} \times 7.5$ or 2×1.5 or $7.5 \div 2.5$ oe</p>	<p>M1</p>	<p>FT 'their $\frac{5}{2}$', providing it is a single value; method must be seen if FT;</p>																																								
<p>3 (cm)</p>	<p>A1 (4)</p>	<p>CAO; Allow embedded in ratio 7.5 : 3</p>																																								

22.(a) $9n - 8$ oe	B2	Allow e.g. $n9 - 8$ or $n \times 9 - 8$ B1 for $9n + k$ where $k \neq -8$
22.(b)(i) 303	B1	
22.(b)(ii) Valid explanation e.g. '601 is not in the 3 times table.' or '601 is not a multiple of 3.' or correctly (partially) solve the equation $3(n^2 + 1) = 601$ to show n is not an integer	E1	
	(4)	
23.* $40 \div (1 + 3 + 4)$ or (egg, cheese, meat =) 5, 15, 20 $0.2 \times 5 + 0.1 \times 3 \times 5 + 0.25 \times 4 \times 5$ si (= 1 + 1.5 + 5) oe 7.5 or $7\frac{1}{2}$	M1 M2 A1	Allow for $8 \times 5 = 40$ but not for $40 \div 5 = 8$ 5, 15, 20 may be in a ratio or may be implied by e.g. tallying FT $40 \div$ 'their (1 + 3 + 4)'; may be in stages; sight of 1, 1.5 and 5 followed by an answer of 7 or 8 implies M2 M1 for 2 terms out of 3 correct in the sum si or for (egg, cheese, meat =) 1, 1.5, 5 CAO; Allow $\frac{15}{2}$; ignore rounding to e.g. 7 or 8 once correct answer seen; <i>an answer of 32.5 is a misinterpretation not a misread of the figures</i>
Alternative method $0.2 \times 40 \times 1 + 0.1 \times 40 \times 3 + 0.25 \times 40 \times 4$ (= 8 + 12 + 40 = 60) oe $\div (1 + 3 + 4)$ 7.5 or $7\frac{1}{2}$	M2 M1 A1	May be in stages; M1 for sight of 8, 12 and 40 FT 'their 8 + 12 + 40' ; CAO; Allow $\frac{15}{2}$; ignore rounding to e.g. 7 or 8 once correct answer seen; final answer of e.g. $\frac{60}{8}$ is A0 <i>an answer of 32.5 is a misinterpretation not a misread of the figures</i>
	(4)	

<p>24.*(a) 0.35 identified as the appropriate relative frequency for 400 customers</p> <p>$0.35 \times 400 \times 3$ or 140×3 si</p> <p>(£)420(.00)</p>	<p>B1</p> <p>M2</p> <p>A1</p>	<p>and no other relative frequency</p> <p>FT 'their 0.35', provided it is 0.31, 0.43 or 0.38 or 0.34 or 0.36 for M2 or M1; no FT if e.g. a sum of relative frequencies has been used</p> <p>M1 for 0.35×400 si; not just for e.g. '0.35 of 400'</p> <p>CAO</p>
<p>24.(b) Yes and valid explanation involving (1000 being) the largest number of customers e.g. 'It is the relative frequency from the largest sample.'</p>	<p>E1</p> <p>(5)</p>	<p>Do not allow 'Out of 1000 customers 0.38 were sent a free box.' or 'Yes as the average relative frequency to customer ratio is higher'</p>
<p>25.*(a)(i) Answer in range 0.8 to 0.9</p>	<p>B1</p>	<p>Allow answer in range 0.8 to 0.9 and $\frac{5}{6}$ but do not allow $\frac{5}{6}$ only (question requires use of graph); must be the only answer not for coordinates as final answer</p>
<p>25.(a)(ii) $y = 3x + 2$ only indicated</p>	<p>B1</p>	
<p>25.(b) $y = 4x$ only indicated</p>	<p>B1</p> <p>(3)</p>	