



GCSE MARKING SCHEME

AUTUMN 2017

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

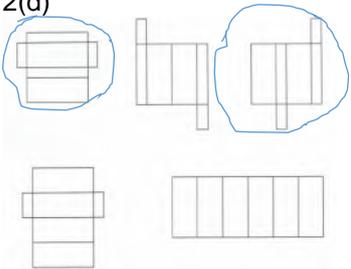
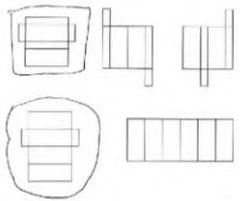
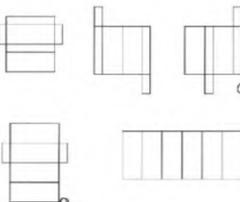
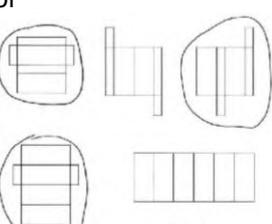
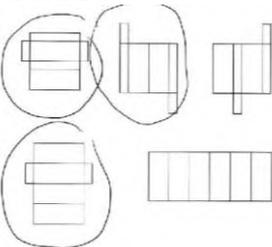
INTRODUCTION

This marking scheme was used by WJEC for the 2017 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.

GCSE Mathematics – Numeracy Unit 1: Foundation Tier Autumn 2017 Final	Mark	Comment
1(a) (1, 8)	B1	Accept a more accurate set of coordinates for the number '31' eg (0.8, 8.2) but not (0.5, 8.5)
1(b) (6, 7) marked on grid	B1	
1(c) (Turn left from the Saw Mill) Turn left at number 16 OR take the 1 st left Turn right at number 22 OR take the 1 st right (Go straight ahead to the War Memorial (number 20)).	B2	Accept: Left Right (Straight ahead). Award B1 for the left or right given in the correct order or award B1 for an alternative longer set of directions given fully.
2(a) February 2015	B1	Accept Feb for February and 15 for 2015 Do not accept 2, 02 or 2 nd for February
2(b) 267	B1	
2(c) 01-18/315	B2	Award B1 for sight of either 01(-)18 or 315(th) seen Eg award B1 for: 0118/315 1-18/315 01-18-315 01-2018/315 08-18/315 01/-18/267 01-18/314 0118/314 01/18/08 Award B0 for 18/01/08 or 08-01/2018

<p>2(d)</p> 	<p>B2</p>	<p>Award B1 for 1 or 2 correct nets indicated with no more than 1 incorrect net indicated Eg Award B1</p>  <p>or</p>  <p>or</p>  <p>Award B0</p> 
<p>3(a)(i) 16(th), 17(th) and 18(th) (January)</p>	<p>B2</p>	<p>May be evident on diagram. Dates can be in any order.</p> <p>Award B1 for 2 correct dates and no more than one incorrect.</p> <p>Award B0 if only Tuesday, Wednesday and Thursday stated with no dates evident.</p>

<p>3(a)(ii) (Working hours are) 8 hours (per day)</p> <p>(Fee for Carpenter is) $20 \times 8 (\times 3)$ (£)480</p> <p>(Fee for Plumber is) ($180 \times 3 =$) (£)540</p> <p>(Total cost of fees are $480 + 540 + 575 =$) (£)1595</p> <p>Organisation and communication Accuracy of writing</p>	<p>B1</p> <p>M1</p> <p>A1</p> <p>B1</p> <p>B1</p> <p>OC1 W1</p>	<p>May be seen or implied in workings for the Carpenter.</p> <p>FT $20 \times$ 'their hours' including 9 hours ($\times 3$)</p> <p>This may be seen or implied by correct answer of total fees.</p> <p><i>Answer of £540 from $20 \times 9 \times 3$ award B0 M1 A1</i></p> <p>FT a correct calculation for 'their derived fee for carpenter' + 'their derived fee for plumber' + 575</p> <p><i>Note: For $160 + 540 + 575 = 1275$ award B1, M1, A0, B1, B1</i></p> <p><i>Common incorrect answer of $(540 + 540 + 575 =) 1655$ Award B0 M1 A1 B1 B1</i></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 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 <p>For W1, candidates will be expected to:</p> <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.
<p>3(b) 11(cm) (± 2mm) $11 \times 50 (\div 100)$ 5.5 (metres)</p>	<p>B1</p> <p>M1</p> <p>A1</p>	<p>(10.8 (cm) to 11.2(cm))</p> <p>FT 'their 11'</p> <p>Answer must be in metres only. E.g. For an answer of 5m 50cm or 550cm using 11cm award B1 M1 A0</p> <p>Measurements of: 10.8 cm gives 5.4 m 10.9 cm gives 5.45 m 11 cm gives 5.5 m 11.1 cm gives 5.55 m 11.2 cm gives 5.6 m</p>

4(a) 14	B1	
<p>4(b) Correct explanation given E.g. 'You add on 4 each time.' 'There are 2 lengths that are common.' 'There is some overlap.' 'Start with 6 but then add on 4 each time' 'Because after each link you need another 4 lengths of silver' 'Because she only needs 4' 'Because you don't add on the middle links' 'If she uses 6 lengths of silver then she will have 2 spare for all but the first one' 'Needs 6 lengths of silver for only the 1st link'</p>	E1	
<p>4(c) Attempt to continue the sequence to 50 (6, 10, 14), 18, 22, 26, 30, 34, 38, 42, 46, 50</p> <p style="text-align: right;">12</p>	<p>M1</p> <p style="text-align: right;">A1</p>	<p>Allow if clearly trying to create a linear sequence with difference of 4. (Allow no more than 2 errors) Award M1 for correct diagram with 12 links drawn</p> <p>An answer of 12 earns both marks</p> <p style="text-align: right;"><i>Alternative method 1</i> $(50 - 2) \div 4$ M1 12 A1</p> <p style="text-align: right;"><i>Alternative method 2</i> $1 + (50 - 6) \div 4$ M1 12 A1</p> <p style="text-align: center;"><i>Accept embedded answers.</i></p> <p><i>Award SC1 for an evaluated answer from an incomplete method</i> <i>(50 - lengths of silver) \div 4</i> <i>Eg (50-10) \div 4 = 10</i> <i>or (50-6) \div 4 = 11</i></p>

5(a)	-18°C	B1	
5(b)	-95°C	B1	
5(c)	Answer in the range 50 to 57 (°C)	B2	<p>Allow an answer in the range -50 to -57</p> <p>Award B1 for a correct calculation that would lead to an answer in the range 50 to 57 or -50 to -57 with values used in the range (10 to 12) and (-40 to -45)</p> <p>Eg Award B1 for 10 – (-40) OR -40 – 10 OR 12 - - 44 OR 11 + 43</p> <p>If no marks award B1 for the numbers (10 to 12) and (-40 to -45) used in an addition or subtraction calculation e.g. 12 – 44 =</p>
6.	20×4 OR $20 + 20 + 10 + 20 + 20 + 10$ 80 (cm) AND 100 (cm) 20 (cm)	M1 A1 B1	<p>FT 'their derived 100' – 'their derived 80'</p> <p>Alternative markscheme:</p> <p>Award SC3 if rectangular diagram labelled with all dimensions and answer given as 20 cm</p> <p>Award SC2 if rectangular diagram labelled with dimensions on one width and one length and answer given as 20 cm</p> <p>Award SC2 if either 80(cm) or 100 (cm) seen with an answer of 20 (cm)</p> <p>Award SC1 if diagram labelled with dimensions on at least one width and one length (with 20cm not given)</p> <p>Award SC1 if only 20cm seen with no workings or dimensions labelled</p> <p>Award SC1 if 20cm seen with only one dimension labelled</p> <p><i>Note: the dimensions may be implied from their workings or statements</i></p>

7.		B4	<i>Penalise incorrect units -1 once only B1 for each supermarket</i>
Supermarket	Cost of 6 lemons		
Cost 4go	(Can buy exactly 6 lemons Twice 3 for 2, 2x2x40p) (£)1.6(0) or 160(p)	E1	Accept ' (£)1.5(0) or 150(p) ' as indication of Edges Mart Depends on at least B2 previously awarded, then FT 'their cheapest cost' provided it is based on at least 3 costs calculated
Edges Mart	(Has to buy 8 lemons 2 nets of 4 lemons) (£)1.5(0) or 150(p)		
Food Uno	(Has to buy 10 lemons 2 bags of 5 lemons) (£)1.52 or 152(p)		
Greenway	(Can buy exactly 6 lemons 6 x 26p) (£)1.56 or 156(p)		
Conclusion to buy at Edges Mart			
8(a)	35	B1	

<p>8(b) Need 8 metres of panels</p> <p>Panels, any indication of 1 the following:</p> <ul style="list-style-type: none"> • 4 × 2 (m) • 2.5(m), 2(m), 2(m), 1.5(m) • 2.5(m), 2.5(m), 2(m), 1(m) • 2.5(m), 2.5(m), 1.5(m), 1.5(m) <p>Cost for the fence as appropriate:</p> <ul style="list-style-type: none"> • 5 × 14 + 4 × 30 • 5 × 14 + 40 + 2 × 30 + 26 • 5 × 14 + 2 × 40 + 30 + 18 • 5 × 14 + 2 × 40 + 2 × 26 <p>(£) 190 OR (£) 196 OR (£) 198 OR (£) 202</p>	<p>S1</p> <p>B2</p> <p>M2</p> <p>A1</p>	<p>Stated or implied</p> <p><i>Posts and panels do not have to be shown in any particular order (also see diagram)</i></p> <p>FT from 8.5 – ‘their width for post(s)’, provided 4 possible whole panels are selected</p> <p>B1 for any 1 of the following:</p> <ul style="list-style-type: none"> • if total length of their 4 panels adds to 8.5 m (posts forgotten) • if total length of their number of panels, ≠4, adds to 8 m • using 4 panels (not adding to 8m) • FT 8.5 – ‘their width for post(s)’ provided 2 or 3 whole panels are selected <p><i>Do not accept any panels cut into fractions</i></p> <p>Ignore any incorrect units for M2 or M1</p> <p>FT provided B1 or S1 previously awarded for M2 or M1 (but A0)</p> <p>M1 for 1 of the following:</p> <ul style="list-style-type: none"> • calculation costing ‘their panels’ only (posts not included), • cost of posts (5 × 14 =) (£) 70, which may be elicited from within a calculation <p>CAO</p> <p>Only these answers accepted and must be from correct working. Do not ignore incorrect units, if a unit is given it must be correct</p>
<p>8(c) $1(.50 \times 0(.10 \times 4 \times (0.0)2$</p> <p>120(p) OR (£)1.2(0)</p>	<p>M2</p> <p>A1</p>	<p>Allow inconsistent units for M marks</p> <p>Ignore any extra faces painted</p> <p>M1 for $1(.50 \times 0(.10$ with either $\times 4$ or $\times (0.0)2$</p> <p>CAO, if units are given they must be correct for A1</p> <p><i>Do not ignore further working, such as painting top and/or bottom of the post (for A mark)</i></p>

<p>9.</p> <p>$a = 113^\circ$ $b = 108^\circ$</p> <p>$c = 51^\circ$</p> <p>$d = 51^\circ$</p>	<p>B1 B1 B1 B1</p>	<p>FT throughout</p> <p>FT 360 – 67 – 72 – 'their a', or 221 – 'their a' (Check if $a + b = 221$)</p> <p>FT 180 – 21 – 'their b', or 159 – 'their b' (Check if $b + c = 159$)</p> <p>FT for 'their d' = 'their c' provided $c \neq 90^\circ$ and $c \neq 180^\circ$ or any other multiple of 90°</p>
<p>10(a) All 6 plots correct</p>	<p>B2</p>	<p>B1 for</p> <ul style="list-style-type: none"> any 3, 4 or 5 correct plots not joined point to point, or all 6 correct plots but joined point to point <p>Ignore sight of any attempt at a line of best fit</p>
<p>10(b) YES and a reason, e.g. 'positive correlation', 'increase in height with increase in waist', 'the height and waist are increasing'</p>	<p>E1</p>	<p>Do not accept reference using values from the table, without further explanation</p>
<p>10(c) Reason, e.g. 'the measurements for these 6 people show correlation, but people don't come in standard sizes', 'it is only 6 people', 'not all people follow the trend', 'waist and height measurements are not directly proportional', 'not enough data', 'you really need more data to tell', 'because she could have chosen the people on purpose to prove her point', 'because some people are thinner than others but the same height', 'some waists might be the same as others'</p>	<p>E1</p>	<p><u>Ignore additional comments referring to improvement</u></p> <p>Allow, e.g. 'Ffion has not considered children', 'because waist sizes often vary', 'because not everybody is the same', 'they are not always in a straight line'</p> <p>Do not accept, e.g. 'could be measured incorrectly', 'could repeat the experiment', 'measure more people', 'get more data' (implies how to improve, not a comment on the data given) <i>Do not accept reasons based on how to improve the experiment alone</i></p>
<p>11(a) $5 \times 13 + 26 + 9 \times 7 + 38$ (91 + 101) $(\pounds)192$</p> <p>(Change) $(\pounds) 8$</p>	<p>M1 A1 B1</p>	<p>Attempt to add must be implied, not for sight of $5 \times 13 + 26$ and $9 \times 7 + 38$</p> <p>CAO If units are given they must be correct</p> <p>FT 200 - 'their $\pounds 192$' provided $\leq \pounds 200$ and either</p> <ul style="list-style-type: none"> $(\pounds)91$ or $(\pounds)101$ seen in a sum of two amounts, or M1 previously awarded <p><i>Do not accept either</i> $5 \times 13 + 26 + 9 \times 5 + 38 (= \pounds 174)$ or $7 \times 13 + 26 + 9 \times 7 + 38 (= \pounds 218)$ as misreads, however award of B1 may be possible</p>

<p>11(b) Equating $13x + 26$ with $9x + 38$ or sight of a correct evaluated trial of the same number of days for cement mixer and jet washer</p> <p>$13x - 9x = 38 - 26$ or $4x = 12$ or $x = 12/4$ or trial & <u>improvement</u> (i.e. testing for a number of days with a 2nd trial getting closer to 3 days unless original trial is 3 days)</p> <p style="text-align: right;">3 (days)</p>	<p>B1</p> <p>M1</p> <p>A1</p>	<p>Formal notation is not required Sight of $13x + 26$ with $9x + 38$ is insufficient without further correct working</p> <p>FT equivalent level of difficulty Method to solve may be informal</p> <p>CAO. Some relevant working must be seen to award all 3 marks Do not award all 3 marks for an <u>unsupported</u> correct response, however award SC2</p> <p>Sight of both costing (£)65 is B1, M1, but A0 if 3 days not seen in working A final answer of 65 (days) is B1, M1, A0</p> <table border="1"> <thead> <tr> <th>Number of days</th> <th>Cement mixer £</th> <th>Jet washer £</th> </tr> </thead> <tbody> <tr><td>1</td><td>39</td><td>47</td></tr> <tr><td>2</td><td>52</td><td>56</td></tr> <tr><td>3</td><td>65</td><td>65</td></tr> <tr><td>4</td><td>78</td><td>74</td></tr> <tr><td>5</td><td>91</td><td>83</td></tr> <tr><td>6</td><td>104</td><td>92</td></tr> <tr><td>7</td><td>117</td><td>101</td></tr> <tr><td>8</td><td>130</td><td>110</td></tr> </tbody> </table>	Number of days	Cement mixer £	Jet washer £	1	39	47	2	52	56	3	65	65	4	78	74	5	91	83	6	104	92	7	117	101	8	130	110
Number of days	Cement mixer £	Jet washer £																											
1	39	47																											
2	52	56																											
3	65	65																											
4	78	74																											
5	91	83																											
6	104	92																											
7	117	101																											
8	130	110																											
<p>12. A line from Ty Gwyn of $9\text{cm} \pm 2\text{mm}$ or an unambiguous point within tolerance (indication of $9\text{cm} \pm 2\text{mm}$)</p> <p>Showing arcs for bisection of the angle Correct bisection of the angle $\pm 2^\circ$, with the line shown</p>	<p>B1</p> <p>M1</p> <p>A1</p>	<p>May be outside tolerance</p>																											