



GCSE MARKING SCHEME

SUMMER 2018

**GCSE (NEW)
MATHEMATICS - NUMERACY
UNIT 1 - FOUNDATION TIER
3310U10-1**

INTRODUCTION

This marking scheme was used by WJEC for the 2018 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 (NEW)

SUMMER 2018 MARK SCHEME

| GCSE Mathematics – Numeracy Unit 1: Foundation Tier Summer 2018 | Mark | Comment |
|--|--|--|
| 1(a) -27.2 (°C) | B1 | Accept -27.2(°C) with -17(.0 °F) Allow -27 or 27.2 as evidence of identifying lowest temperature. Do not accept Scotland |
| 1(b) 105 (°F) | B1 | |
| 1(c) 35.2 - - 23.3 or equivalent 58.5(°C) | M1 A1 | Allow -23.3 – 35.2 Allow -58.5(°C) If no marks award SC1 for a calculation using 35.2 and 23.3 e.g. 35.2 – 23.3 (= 11.9) |
| 2(a) BBC1=10 BBC2=5 ITV1=12 S4C=6 Channel 5=7 Five vertical lines at correct heights. (intention of correct height eg line drawn for 10 but not quite at 10) | B2 B2 | May be seen or implied from their vertical line diagram (or other diagram/graph) or in part (b)) Award B1 for any three or four correct frequencies seen or implied. FT their frequencies throughout if seen. If frequencies not seen FT their tallies. If B2 not awarded Award B1 for any 3 or 4 correct vertical lines. (May imply previous B1 or B2) OR Award B1 for any 3 or 4 heights correct in a bar chart or other diagram, including a scatter diagram. Note: If vertical line diagram drawn with no frequencies or tallies seen but one or two heights incorrect as evidence of one error in collecting data award B1 B2. If no marks awarded, award B1 for all 5 correct tallies. |

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|---|-----------|---|
| <p>2(b) Correct explanation given Eg 'add up the frequencies to see if they come to 40 (which is the total number of people asked).'</p> <p>'add up to see if it gives the total'</p> | <p>E1</p> | <p>Reference to 40 or the total is needed.</p> <p>Do not accept 'Look back at the table' 'Crossing them out after putting them in graph' 'Ticking off the ones you have done' 'I have counted all the 5 different TV shows and put them in the right order above' 'Go over it again' 'Check if you counted them all' 'I could look at her results to make sure I've counted correctly' 'By counting them row by row'</p> <p>However accept: 'Check if you counted them all' 'I could look at her results to make sure I've counted correctly' 'By counting them row by row' if a sum of the frequencies to 40 is seen in part (a) or (b).</p> |
| <p>2(c) ITV(1)</p> | <p>B1</p> | <p>FT their graph</p> |

| <p>3. (Area of plot A:) (Number of squares:) Evidence of counting squares inside shape Answer in range 9 – 13 (Area:) 'Their number of squares counted inside' × 100 (m²) evaluated correctly</p> <p>(Area of plot B:) 40 × 22 880 (m²)</p> <p>Plot stated with reason given Eg 'Plot B as both areas are about 900 (m²) but plot B is easier to work with as it is a rectangle.' 'Plot A as the area is bigger.'</p> <p>Organisation and communication</p> <p>Writing</p> | <p>M1 A1 B1</p> <p>M1 A1</p> <p>E1</p> <p>OC1</p> <p>W1</p> | <p>FT area only not perimeter Answer only between 900 and 1300 obtains all 3 marks provided answer is not from perimeter.</p> <p>Award SC1 for answer of 800 (m²) from an estimate of 40× 20.</p> <p>Strict FT provided answers for both plots A and B are given AND at least M1 awarded.</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>4(a) 11</p> | <p>B1</p> | | | | | | | |
| <p>4(b) Attempt to continue the sequence in 2s to 27 (3, 5, 7), 9, 11, 13, 15, 17, 19, 21, 23, 25, 27</p> <p style="text-align: right;">13</p> | <p>M1 A1</p> | <p>Award M1 for correct diagram with set 13 drawn. FT from part (a) if 9 or 13 given as answer to part (a)</p> <table border="1" data-bbox="847 1693 1246 1816"> <thead> <tr> <th>Answer in (a)</th> <th>Answer in (b)</th> </tr> </thead> <tbody> <tr> <td>9</td> <td>14</td> </tr> <tr> <td>13</td> <td>12</td> </tr> </tbody> </table> <p style="text-align: right;"><i>Alternative method (27 – 1) ÷ 2 M1 13 A1 Accept embedded answers.</i></p> | Answer in (a) | Answer in (b) | 9 | 14 | 13 | 12 |
| Answer in (a) | Answer in (b) | | | | | | | |
| 9 | 14 | | | | | | | |
| 13 | 12 | | | | | | | |

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| <p>4(c) No and explanation given E.g. 'You add on 2 each time.' 'There are not 6 bulbs in set 2' '3 times 2 is not 5' '5 times 3 is 15 not 11' 'double and add 1' 'not multiples of 3' '$\times 2 + 1$' 'if it was correct set 2 should be 6 bulbs but it has 5' '7 is not a multiple of 3' '$2n + 1$'</p> | <p>E1</p> | <p>Allow: 'There is 1 bulb in common.' 'There is some overlap.' 'all numbers are odd'</p> <p>Do not accept 'multiply by 2'</p> |
| <p>5(a)Cornell's: ($4 \times \text{£}1.80 =$) (£)7.20 or 720 (p)</p> <p>Larkman's: ($3 \times \text{£}2.20 =$) (£)6.60 or 660(p)</p> <p>(Difference =) 60(p) or (£)0.60</p> | <p>B2</p> <p>B1</p> <p>B1</p> | <p>If units are given they must be correct Award B1 for sight of 4 or 4 implied eg 4 lots of $\text{£}1.80$ added Or sight of $\times 2 \times 2$</p> <p>If units given they must be correct. Do not accept 0.60p or $\text{£}60$. Allow $\text{£}0.60\text{p}$ FT 'their $\text{£}7.20$' – 'their $\text{£}6.60$' correctly evaluated provided at least B1 awarded and Cornell's greater than Larkman's</p> <p><i>Alternative mark scheme working with 1 litre</i> ($2/3$ of (£)1.80 =) (£)1.20 B1 (£)1.10 B1 60(p) B2 (Award B1 if 10(p) given as the difference between 1 litre)</p> |
| <p>5(b) (Radius) 15 (mm)</p> | <p>B3</p> | <p>Award B2 for</p> <ul style="list-style-type: none"> • answer of 1.5 (cm) • answer of 30 (mm) or 3 (cm) • or sight of full method ($70 - (20 + 20) \div 2$ or ($7 - (2 + 2) \div 2$) <p>Award B1 for 7cm =70mm or 20mm=2cm stated or implied e.g. sight of 35mm or 4cm OR Award B1 for full method but using inconsistent units eg ($700 - (20 + 20) \div 2$)</p> |

| <p>6. (Rent increase) $15/100 \times (\pounds)720$ $(\pounds)108$</p> <p>(Rent in October) $(\pounds)828$</p> <p>(Suzanna pays) $(\pounds)276$</p> | <p>M1 A1</p> <p>B1</p> <p>B1</p> | <p>Must be a full correct method to find 15%</p> <p>FT 720 + 'their derived 108' correctly evaluated</p> <p>FT 'their derived 828' $\div 3$ correctly evaluated</p> <p><i>Alternative</i> $((\pounds)720 \div 3 =) (\pounds)240$ B1 $15/100 \times$ 'their derived $(\pounds)240$' M1 $= (\pounds)36$ A1 'their derived $(\pounds)240$' + 'their derived $(\pounds)36$' $= (\pounds)276$ B1</p> | | | | | | | | | | |
|---|--------------------------------------|---|----|-------|----|-----|------|-----|------|-----|------|-----|
| <p>7(a) 57.5 (miles)</p> | <p>B1</p> | | | | | | | | | | | |
| <p>7(b) Method, e.g. $4 \times 230, 8 \times 115$, or equivalent 920 (miles)</p> | <p>M1 A1</p> | <p>FT $16 \times$ 'their 57.5'</p> <p>Useful FT information:</p> <table border="1" data-bbox="943 804 1268 967"> <thead> <tr> <th>FT</th> <th>Miles</th> </tr> </thead> <tbody> <tr> <td>55</td> <td>880</td> </tr> <tr> <td>56.5</td> <td>904</td> </tr> <tr> <td>58.5</td> <td>936</td> </tr> <tr> <td>59.5</td> <td>952</td> </tr> </tbody> </table> | FT | Miles | 55 | 880 | 56.5 | 904 | 58.5 | 936 | 59.5 | 952 |
| FT | Miles | | | | | | | | | | | |
| 55 | 880 | | | | | | | | | | | |
| 56.5 | 904 | | | | | | | | | | | |
| 58.5 | 936 | | | | | | | | | | | |
| 59.5 | 952 | | | | | | | | | | | |
| <p>8(a) $2 \times 5.60 + 2 \times 2.30$ $(\pounds) 15.80$ $(\pounds) 4.20$</p> | <p>M1 A1 A1</p> | <p>FT 20 – 'their 15.80' correctly evaluated provided M1 awarded</p> <p><i>Alternative:</i> $20 - 2 \times 5.60 - 2 \times 2.30$ M2 $(\pounds)4.20$ A1</p> <p>Ignore if working with both columns, but only award final A1 if unambiguous final answer</p> <p>If no marks, award SC1 for an answer of</p> <ul style="list-style-type: none"> • $(\pounds)1.9(0)$ from including charge for Anton (under 3), or • $(\pounds)2.14$ from incorrect column used | | | | | | | | | | |
| <p>8(b) (Adult extra 10% of $\pounds 5.60$ is $\pounds (0.)56$</p> <p>(Adult with extra 10% is $\pounds 6.16$ OR (Adult pays too much by) $6.4(0) - 5.6(0) - (0.)56$</p> <p>(Adult pays too much by) 24p or $\pounds 0.24$</p> | <p>B1</p> <p>B1</p> <p>B1</p> | <p>Ignore units. $(\pounds)1(.)12$ implies 56(p)</p> <p>$(\pounds)12.32$ implies $(\pounds)6.16$</p> <p>FT 'their 56p' provided 10% of $\pounds 5.60$ attempted</p> <p>CAO. B0 for 48(p) If units are given they must be correct</p> | | | | | | | | | | |

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| <p>8(c) Intention to calculate $714\,000 \times 2 \div 7$</p> <p>204 000 (m²)</p> | <p>M1</p> <p>A1</p> | <p>May be seen in stages Sight of $2/7 \times 714\,000$ is insufficient for M1, there must be an intention to $\div 7$ and $\times 2$, e.g. allow from sight of incorrect responses 24000, or 2×12000</p> <p>Mark final answer</p> |
| <p>9(a) Suitable reason, e.g. 'the range is not an average', 'range doesn't take all the goals into consideration', 'doesn't tell you about the number of goals scored', 'because the range is only the difference between the highest and the lowest'</p> | <p>E1</p> | <p>Ignore additional comments made, irrespective of being reasonable or not</p> <p>Do not accept, e.g. 'Different number of games played', 'Wales played more games in 1984', 'average is not relevant', 'Wales scored a different number of goals in the 2 years', 'Wales scored more goals in 1985', 'Wales might have had a different team in 1985', 'because the range is the difference between the highest and the lowest', 'to find the average you find the mean'</p> |
| <p>9(b)(i) Method to find the mean, e.g. $5 \div 8$ or $8 \div 6$</p> <p>Both years correct: 1984 $5/8$ (goals), 1985 $8/6$ (goals) AND suitable conclusion e.g. 'yes', 'true', '1985 is better than 1984'</p> | <p>M1</p> <p>A2</p> | <p>Accept for 1 year shown, or 1 correct year</p> <p>Accept equivalent correct interpretation showing understanding of comparison of the means without showing the fractions</p> <p>Accept 1 remainder 2 for $8/6$</p> <p>Do not ignore further inverse working, e.g. $8 \div 5$ rather than $5 \div 8$</p> <p>A1 for 1 of their 2 means correct, do not ignore further inverse working</p> <p>Left as operations, i.e. $5 \div 8$ and $8 \div 6$, if no further interpretation, A0 However if further interpretation, e.g. being <1 and >1, or equivalent then award A1</p> <p><i>Note:</i> 1984: $(1+1+1+0+0+0+0+2) \div 8$ $(= 5/8 = 0.625 \text{ goals})$ 1985: $(1+1+3+2+1+0) \div 6$ $(= 8/6 = 1.33... \text{ goals})$ Accept rounding or truncation</p> |

| <p>9(b)(ii) Reason, e.g. 'other teams might have been stronger', 'don't know about injuries', 'home and away goals not considered', 'doesn't consider winning and losing', 'Wales haven't played against the same teams in the 2 years', 'they played different teams', 'there were different players', 'doesn't consider goals against'</p> | E1 | <p>Allow, e.g. 'different number of matches'</p> <p>Do not accept, e.g. 'only looked at mean'</p> <p><i>Allow statement of different</i></p> <ul style="list-style-type: none"> • <i>players</i> • <i>number of goals</i> • <i>teams</i> • <i>number of matches</i> | | | | | | | | | | | | | | | | | | | | |
|---|-------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|-------|--|-------|--|-------|--|-------|--|----|--|
| <p>10(a) 10:13</p> | B1 | | | | | | | | | | | | | | | | | | | | | |
| <p>10(b) (Leaves Grainsey at) 13(:)00 or 1p.m.</p> <table border="1" data-bbox="240 712 493 1034" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 2px;">Bus 6</th> <th style="padding: 2px;">Bus 7</th> </tr> </thead> <tbody> <tr><td style="padding: 2px;">10:20</td><td style="padding: 2px;">10:45</td></tr> <tr><td style="padding: 2px;">10:40</td><td style="padding: 2px;">11:30</td></tr> <tr><td style="padding: 2px;">11:00</td><td style="padding: 2px;">12:15</td></tr> <tr><td style="padding: 2px;">11:20</td><td style="padding: 2px;">13:00</td></tr> <tr><td style="padding: 2px;">11:40</td><td style="padding: 2px;"></td></tr> <tr><td style="padding: 2px;">12:00</td><td style="padding: 2px;"></td></tr> <tr><td style="padding: 2px;">12:20</td><td style="padding: 2px;"></td></tr> <tr><td style="padding: 2px;">12:40</td><td style="padding: 2px;"></td></tr> <tr><td style="padding: 2px;">13:00</td><td style="padding: 2px;"></td></tr> </tbody> </table> | Bus 6 | Bus 7 | 10:20 | 10:45 | 10:40 | 11:30 | 11:00 | 12:15 | 11:20 | 13:00 | 11:40 | | 12:00 | | 12:20 | | 12:40 | | 13:00 | | B4 | <p>Allow 13:00 p.m. or 1:00 or 1 o'clock</p> <p>B3 for attempt to add 3 hours onto 10:00 (Do not accept 10:00 + 180) OR Listing 9 further times for bus 6 and 4 further times for bus 7 with at most one error in total (FT with that 1 error to check further times)</p> <p>B2 for sight of result (LCM 2 × 2 × 3 × 3 × 5 =) 180 (minutes) or 3 hours OR Listing 7 further times for bus 6 and 3 further times for bus 7 with at most one error in total (FT with that 1 error to check further times) OR Listing 5 further times for bus 6 and 2 further times for bus 7 with no errors.</p> <p>B1 for sight of 20 = 2×2×5 with 45 = 9×5 OR for sight of 20 = 4×5 with 45 = 3×3×5 OR for sight of 20 = 4×5 with 45 = 9×5 OR Listing 3 further times for bus 6 and 2 further times for bus 7 with at most one error in total (FT with that 1 error to check further times) OR Listing 20, 40, 60, ... AND 45, 90, 135, ...</p> |
| Bus 6 | Bus 7 | | | | | | | | | | | | | | | | | | | | | |
| 10:20 | 10:45 | | | | | | | | | | | | | | | | | | | | | |
| 10:40 | 11:30 | | | | | | | | | | | | | | | | | | | | | |
| 11:00 | 12:15 | | | | | | | | | | | | | | | | | | | | | |
| 11:20 | 13:00 | | | | | | | | | | | | | | | | | | | | | |
| 11:40 | | | | | | | | | | | | | | | | | | | | | | |
| 12:00 | | | | | | | | | | | | | | | | | | | | | | |
| 12:20 | | | | | | | | | | | | | | | | | | | | | | |
| 12:40 | | | | | | | | | | | | | | | | | | | | | | |
| 13:00 | | | | | | | | | | | | | | | | | | | | | | |
| <p>11(a)(i) (£) 20 (£) 30</p> | <p>B1 B1</p> | <p>If B0, B0, award SC1 for (£)30 followed by (£)20</p> | | | | | | | | | | | | | | | | | | | | |

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| <p>11(a)(ii)</p> <p>16 (years) 0 (months) 13 (years) 6 (months)</p> | <p>B3</p> | <p>Accept 16 (years) with months left blank throughout</p> <p>B2 for (in order)</p> <ul style="list-style-type: none"> • 16 (years) 0 (months) with 13 (years) 5 (months), or • 13 (years) 6 (months) with 16 (years) 0 (months), or • 16 (years) 0 (months) with 13½ (years) 0 or 6 (months) <p>B1 for</p> <ul style="list-style-type: none"> • either answer correct in appropriate statement accept 16 (years) 'blank' (months), or • 13 (years) 5 (months) followed by 16 (years) 0 (months), or • 13½ (years) 0, 6 (months) followed by 16 (years) 0 (months) |
| <p>11(b)(i) 13 (years old)</p> | <p>B1</p> | <p>CAO</p> |
| <p>11(b)(ii) Indicates or implies 'Yes' with a reason, e.g. 'only one young person gets more paid towards their mobile phone bill', 'the 13½ year old (only) gets £27.5(0), 'There are older children that pay less than Lekan', 'only 3 others pay the same or more', 'most pay less', 'only 4 pay more or the same' 'the amount paid for other 13-year olds is less', 'most parents pay less',</p> <p>OR</p> <p>Indicates or implies 'No' with a reason, e.g. 'there is no correlation', 'there is no relationship between age and amount'</p> | <p>E1</p> | <p>Do not accept 'Yes, he is the youngest'</p> <p>Accept 'Yes' with a reasonable true comparison</p> <p>If amounts are quoted they must be correct unless accompanied by a correct comparative statement</p> |
| <p>12. 112 (grams of butter) 98 (grams of flour) 1704 (millilitres of milk) 252 (grams of cheese)</p> | <p>B1 B1 B1 B1</p> | |