## GCSE MARKING SCHEME

AUTUMN 2019

GCSE<br>MATHEMATICS - NUMERACY UNIT 1 - INTERMEDIATE TIER 3310U30-1

## INTRODUCTION

This marking scheme was used by WJEC for the 2019 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

## AUTUMN 2019 MARK SCHEME

| GCSE Mathematics - Numeracy Unit 1: Intermediate Tier | Mark | Comments |
| :---: | :---: | :---: |
| 1 (a) $8 \times 20 \div 5$ or $1.6 \times 20$ or equivalent 32 (km) | $\begin{aligned} & \hline \text { M1 } \\ & \text { A1 } \end{aligned}$ | Allow calculation $1.5 \times 20$ or $1.61 \times 20$ <br> Allow FT answer ( $1.5 \times 20=$ ) $30(\mathrm{~km})$ <br> or $(1.61 \times 20=) 32.2(\mathrm{~km})$ <br> If no workings shown accept an answer of 32 (km) and allow an answer of $30(\mathrm{~km})$ or $32.2(\mathrm{~km})$ |
| $\begin{aligned} & 1 \text { (b) }(100 \times) 180 \div 3600 \text { or } \frac{180}{3600} \text { or } 1 / 20 \text { or equivalent } \\ & 5(\%) \end{aligned}$ | M1 <br> A1 | M0 for $3600 \div 180$ unless sight of $1 / 20$ or equivalent <br> Allow M1 for sight of $180 \div 3600$ ( $=20$ or 30 or ....) <br> Accept ' $10 \%=360,5 \%=180$ ' for M1 A1 <br> Allow M1 A1 from sight of 3600/180 = 5(\%) <br> If no marks, award SC1 for an answer of 95(\%) |
| $\begin{aligned} & 1 \text { (c) } 5 \div 3 \text { or } 500 \div 3 \\ & 1.6(66 \ldots) \text { or } 166(.66 \ldots) \\ & \\ & \\ & 167(\mathrm{~cm}) \text { or } 1.67(\mathrm{~m}) \end{aligned}$ | M1 <br> A1 <br> A1 | Accept $501 \div 3$ <br> Ignore further incorrect digits beyond either 1.6 or 166 Accept 1.67 or 167. Allow 160,170 or 1.7 <br> CAO <br> Do not accept 1.67 cm or 167 m (units incorrect) |
| $\begin{aligned} & \text { 1(c) Alternative method using trials: } \\ & \text { Charge for } \begin{array}{l} 1(.) 66 \text { is (£)4(.)98(p) or } \\ \\ 1(.) 67 \text { is (£)5(.) }) 01 \end{array} \\ & 167(\mathrm{~cm}) \text { or } 1.67(\mathrm{~m}) \end{aligned}$ | M2 A1 | M1 for correctly evaluated charge for at least 2 heights, provided trial is $184 \geq h \geq 150$ <br> CAO <br> Do not accept 1.67 cm or 167 m (units incorrect) <br> Note: $166 \times 3=498,167 \times 3=501$ |


| 2(a) $(10+5) \times 3$ or $10 \times 3+5 \times 3$ | M1 |  |
| :---: | :---: | :---: |
| 2 (b) 72 | B1 | Allow unambiguous indication of both 27 and 45 |
| 2(c) $\quad \frac{10}{67}$ | B1 |  |
| 2(d) $($ Earphones $£)(30+22) \times 15$ $(=£ 780)$ <br> $($ USB leads $£)(22+5) \times 3$ $(=£ 81)$ <br> (£) 861 | M1 <br> M1 <br> A2 | CAO ISW <br> A1 for ( $£$ )780 or ( $£$ )81 <br> If Friday used, award SC2 for an answer of (£)570 or SC1 for correct method for Friday |
| $\begin{aligned} & \text { 2(d) Alternative method } 1 \\ & 30 \times 15+22 \times 15+22 \times 3+5 \times 3 \\ & (=450+330+66+15) \end{aligned}$ <br> (£) 861 | $\begin{aligned} & M 2 \\ & A 2 \end{aligned}$ | M1 for the sum of any 2 of these products <br> CAO ISW <br> A1 for sight of any two of 450, 330, 66 and 15 <br> If Friday used, award SC2 for an answer of (£)570 or <br> SC1 for correct method for Friday |
| 2(d) Alternative method 2 $\begin{aligned} & 30 \times 15+22 \times(15+3)+5 \times 3 \\ & (=450+396+15) \end{aligned}$ <br> (£) 861 | M2 <br> A2 | M1 for sight of $2^{\text {nd }}$ term or for the sum of $1^{\text {st }}$ and 3rd of these products <br> CAO ISW <br> A1 for sight of 396 or for sight of 450 and 15 <br> If Friday used, award SC2 for an answer of ( $£$ ) 570 or SC1 for correct method for Friday |


| 3(a) States or implies 'Can't tell' with a reason, e.g. 'diagram doesn't show how accurate the homework was', <br> 'it only gives the times spent on homework', 'doesn't say what the students marks were', 'doesn't show if students got homework correct or not', | E1 | Allow, e.g. <br> 'the given information (only) shows they attempt homework' <br> 'graph doesn't give this detail', <br> 'diagram doesn't show data for that', <br> 'because it doesn't specify it', <br> 'because there is no data about it', <br> 'it says "attempted" doesn't say if they were right or wrong', <br> 'it (only) shows times', <br> 'doesn't show percentages', <br> 'no results available', <br> 'it doesn't say if they had it wrong or not', <br> 'no marks' <br> Do not accept, e.g. <br> 'we don't know how many marks there are to be earned', <br> 'it shows frequency', <br> 'doesn't show how much homework to get a mark', 'because there is no correlation with the graph', 'because it doesn't state what the homework was out of' |
| :---: | :---: | :---: |
| $\text { 3(b) } 5+9+11+7+4$ <br> 36 (students) | M1 A1 | Allow M1 if one error in working with 5 numbers (check diagram also, but intention to add must be clear) |
| $\text { 3(c) } \frac{11}{25}$ | B2 | ISW <br> B1 for .../25 or 11/... provided not from incorrect working $\text { (e.g. } 4+7+11=22 \text {, then } 22 / 30=11 / 15 \text { is } B 0 \text { ) }$ <br> B1 for an answer of 44\% if $11 / 25$ not previously seen |
| 4(a) 20 (knots) | B1 |  |
| 4(b) $2.3(0)+2.3(0)+1.15$ <br> or $2.30+3.45$ <br> or $2 \times 2.875$ <br> or $5 \times 1.15$ <br> or equivalent <br>   | M1 | Any correct method ISW |


| 5.(Fresh water charge $£$ ) $20 \times 1.1(0)$ <br> (Waste water charge $£$ ) $0.80 \times 20 \times 1.50$ <br> (Total bill $£ 22+£ 24=$ ) (£) 46 | M1 <br> M2 <br> A1 | ```(= £22) \[ (=£ 24) \] \[ \text { M1 for either } 0.80 \times 20\left(=16 \mathrm{~m}^{3}\right) \text { or } 20 \times 1.50(=30) \] CAO``` <br> Award M2 (waste water) and SC1 for an answer of $£ 28.4(0)$ (from fresh water ( $4 \times 1.10=$ ) $£ 4.40+£ 24$ for waste) <br> OR <br> Award M1 and SC1 for any one of the following: <br> - $\quad$ sight of $(£) 22$ and $(£) 17.6(0) \quad(22 \& 0.8 \times 22)$ <br> - an answer of $(£) 39.6(0) \quad(22+0.8 \times 22)$ |
| :---: | :---: | :---: |
| 6. (Cost of buying pears is $£$ ) $2.5 \times 3.40$ or equivalent <br> (£)8.5(0) <br> (Cost of apples is $£$ ) $12.40-8.50$ <br> (£)3.9(0) <br> (Cost of 1 kg of apples is $£$ ) $3.9(0) \div 3$ <br> (£) $1.3(0)$ | A1 <br> M1 <br> A1 <br> M1 <br> A1 | Accept 850p or $£ 8.50$ p <br> Do not accept 8.50 p or $£ 850$ <br> FT 'their $£ 8.50$ ' <br> FT 'their 8.50 ' provided $\neq(£) 3.40$ <br> FT 'their $£ 3.90$ ' <br> FT 'their 3.90 ' provided $\neq$ whole number multiple of 3 <br> FT provided correct to a penny (rounded or truncated) <br> (Note: $12.40-3.40=9,9 \div 3=(£) 3$ is awarded <br> M0 A0 M1 A0 M1 A0) |
| Organisation and communication <br> Writing | OC1 | For OC1, candidates will be expected to: <br> - present their response in a structured way <br> - explain to the reader what they are doing at each <br> step of their response <br> - lay out their explanations and working in a way that is clear and logical <br> - write a conclusion that draws together their results and explains what their answer means <br> For W1, candidates will be expected to: <br> - show all their working <br> - make few, if any, errors in spelling, punctuation and grammar <br> - use correct mathematical form in their working <br> - use appropriate terminology, units, etc. |


| 7. At least two groups without gaps or overlaps that cover the full age range | B1 | All groups shown need to have no gaps or overlaps <br> Allow if lower age covers 18 or younger, i.e. lower age must include 18 <br> e.g. ' 18 to 21,22 and over', <br> 'Under 18, 18 and over', <br> Allow if upper age covers 50 (or older), i.e. upper age must cover at least up to 50 <br> e.g. ' $18-30,31-50$ ' <br> Allow, e.g. $' 0-20,21-50,51+\prime$ <br> Do not accept, e.g. <br> 'Under 18, over 18', <br> ' 0 - 20, 21 - 50 , 50+', <br> ' $15<18,18<21,21<25,26+$ ', <br> ' $15<18,19<21,22<25,26+$ ', |
| :---: | :---: | :---: |
| At least 3 appropriate criteria, e.g. 'Extremely happy, happy, unhappy', 'Scale of 0 to 10 , with statement that 10 very happy', 'very (happy), fairly (happy), not really (happy), not (happy)' | B1 | Allow if: <br> - a 'neutral' category not given <br> - there is an imbalance between 'happy' and 'unhappy' type categories <br> Accept appropriate use of smiley and sad faces <br> Allow a mix 'happy, sad, not sure' with some text and some emojis <br> Do not accept, e.g. 'scale of 0 to 10 ' without stating which end of the scale is unhappy or happy, 'yes, (sometimes), no' |


| 8(a) Short diagonal 40 (cm) and longer diagonal $50(\mathrm{~cm})$ | B1 | Check diagram |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| (longer diagonal should be >) $1.20 \times 40$ or equivalent, OR (shorter diagonal should be <) $50 \div 1.2$ $\mathrm{OR}(100 \times) \frac{50}{40}$ | M1 | FT 'their 40' and 'their 50' provided <br> - at least one of these values is correct <br> - 'their 40 ' $=20$ <br> - 'their $50 \prime \neq 22$ or 28 |  |  |  |  |
| (longer diagonal should be >) $48(\mathrm{~cm})$, <br> OR (shorter diagonal should be <) 41.6(6.. cm) $\text { OR ((100) } \left.\times \frac{50}{40}=\right) 1(.) 25$ | A1 | FT |  |  |  |  |
| Conclusion, e.g. <br> 'Yes (certain to fly in strong wind)' <br> 'Yes as 48 < longer diagonal' <br> 'Yes ( $125 \%$ > 120\%)' <br> 'Yes (1.25 > 1.2(0)) | E1 | FT provided <br> Do not acc used in (b) | M1 awar <br> t workin | ed <br> for are | seen in | a) unless |
| 8(b) (Method to calculate area) e.g. <br> - $1 / 2 \times 40 \times 50$ <br> - $2 \times 1 / 2 \times 20 \times 22+2 \times 1 / 2 \times 20 \times 28$ <br> (=440 +560) <br> - $1 / 2 \times 40 \times 22+1 / 2 \times 40 \times 28$ <br> (Area of the kite) $1000\left(\mathrm{~cm}^{2}\right)$ <br> (Length of tail) 3.1 (m) | M2 | FT 'their 40 Allow if work M1 for corr triangles, e $20 \times 28$ or <br> CAO <br> FT provided correct leng group | and the ng for a metho implied 0 <br> at least select | 50' a seen for at le rom sig <br> 1 previo from ch | in (a) and ast 2 of the of $20 \times$ <br> usly awa oice of th | used in (b) e 4 possible 22, 440, <br> ded for e correct |
| 9(a) Method of comparison, e.g. <br> - per 50 g <br> - for 2000 g | M1 | Needs to show attempt to compare at least 2 of the 3, e.g. comparing 500 g <br> Allow for sight of $2 \times(0)$. |  |  |  |  |
| Correctly evaluated comparison for 2 of the 3 sizes | A1 | Allow for sight of (£)1.3(0) or 130(p) Ignore incorrect units |  |  |  |  |
|  |  |  | 50 g | 100 g | 1 kg | 2000 g |
|  |  | Str 500 g | 12.5 p | 25p | $£ 2.50$ | £5 |
|  |  | Fus 400g | 12 p | 24p | $£ 2.40$ | £4.80 |
|  |  | Rig 250g | 13 p | 26p | $£ 2.60$ | £5.20 |
|  |  |  |  | P p | g per £ |  |
|  |  | Str 500g | 4 g |  | 400 g |  |
|  |  | Fus 400g |  | 66... g | 416.66.. |  |
|  |  | Rig 250g |  | 46...g | 384.61.. |  |
| Correctly evaluated comparison for all sizes, may be different methods for different stages, AND conclusion '( 400 g ) Fusilli is best value for money' | A1 | Examples: <br> - Comparison of 500 g with 250 g then 250 g with 400 g not a full comparison of all 3 sizes <br> - Comparison of 500 g and 250 g at 500 g and then 500 g and 400 g at 2000 g , possible M1, A1, A1 |  |  |  |  |


| 9(b)(i) $3 \times 48 \div 4$ | $\begin{aligned} & \hline \text { M1 } \\ & \text { A1 } \end{aligned}$ |  |
| :---: | :---: | :---: |
| $\begin{array}{lll} \hline 9 \text { (b)(ii) } & 0.88 & \\ & & 2) \times 20 \div 4 \end{array}$ $\div 2.2$ $4 \text { (kg) }$ | M1 M1 A1 | M marks can be awarded in either order ( $=(2 \times 4.4$ ) <br> Or equivalent full method that could lead to a correct answer <br> (Note: $2 \times 0.88 \times 20 \div 4=2 \times 4.4$ or $5 \times 1.76$ ) <br> CAO <br> If no marks, award SC1 for sight of ( $2 \times 0.88=$ ) 1.76 (lbs) |
| 9(c) Conversion to $\mathrm{cm}, \mathrm{e} . \mathrm{g} .5 \times 1000 \times 100(\times 7)$ $3.5 \times 10^{6}(\mathrm{~cm})$ | $\begin{aligned} & \hline \text { M1 } \\ & \text { A2 } \end{aligned}$ | ( $=500000(\times 7))$ <br> A1 for any one of the following: <br> - an answer of 3500000 (cm) <br> - $3500000(\mathrm{~cm})$ implied by incorrect standard form, e.g. $35 \times 10^{5}$ <br> - for correct expression of 'their 3500000 ' in standard form provided from $5 \times 1000 \times 100$ $\times 7$ <br> - if 7 has been omitted, for an answer of $5 \times 10^{5}$ <br> If no marks, award SC1 for 'their number of cm ', n , provided $\mathrm{n}<0.001\left(\mathrm{n}<1 \times 10^{-3}\right)$ or $\mathrm{n}>1000$ ( $\mathrm{n}>1 \times 10^{3}$ ), correctly written in standard form |
| 10. <br> Sight of 300000 (pesos) or 100000 (pesos) or sight of $500000-200000$ and $600000-500000$ | B1 | Ignore $£$ or other currency for pesos May be implied <br> Allow for sight of $200000-500000 \text { and } 500000-600000$ |
| (Tax at $10 \%$ ) $0.10 \times(500000-200000)$ or $0.10 \times 300000$ or equivalent | M1 | FT use of 'their (500 000-200 000)' from an error in subtraction |
| 30000 (pesos) | A1 | CAO, not FT |
| $\begin{aligned} & \text { (Tax at } 35 \% \text { ) } 0.35 \times 100000 \text { or } \\ & \quad \text { or } 0.35 \times(600000-500000) \text { or equivalent } \end{aligned}$ | M1 | FT use of 'their (600 000-500 000)' as 'their $100000^{\prime}$ from an error in subtraction |
| 35000 (pesos) | A1 | CAO, not FT |
| (Total tax due) 65000 (pesos) | B1 | FT 'their 30000 ' + 'their 35000 ' provided both M1 marks previously awarded <br> Note: If bounds are taken as 1 peso different to those above, award B0 to start, but FT for amounts 1 peso different to those shown above, including award of possible A marks |

\begin{tabular}{|c|c|c|}
\hline \begin{tabular}{l}
11(a) Sight, for the garage, of \(2.55(\mathrm{~m})\) or \(255(\mathrm{~cm})\) \\
Sight, for the boxes, of \(35(\mathrm{~cm})\) and \(52.5(\mathrm{~cm})\)
\[
\begin{aligned}
\& 255-(5 \times 35+52.5) \text { or } 255-175-52.5 \\
\& \text { or } 255-227.5 \text { or equivalent }
\end{aligned}
\]
\end{tabular} \& B1
B1
M1

A1 \& | Provided not from incorrect working (i.e. $40 \times 5+55=255$ is awarded $B 0$ ) |
| :--- |
| FT provided 250 <'their $255 \leq 260$ or $2.5<$ 'their $2.55 \leq 2.6$ and provided $\quad 30 \leq$ 'their 35 ' $<40$ and $50 \leq$ 'their 52.5 < $<55$ |
| FT from consistent place value error for a similar range for 'their bounds' |
| CAO. ISW | <br>

\hline | 11(b) $56 \div 0.7$ or equivalent |
| :--- |
| (£) 80 | \& \[

$$
\begin{aligned}
& \hline \text { M1 } \\
& \text { A1 }
\end{aligned}
$$
\] \& <br>

\hline 12(a) 104 seconds \& B1 \& <br>
\hline 12(b) 86 seconds \& B1 \& <br>
\hline ```
12(c) Sight of median 1 'st July 2018 78 (seconds)
AND
Sight of median 1 1't July 2019 56 or 57 (seconds)
AND
States or implies 'Yes'

``` & B2 & \begin{tabular}{l}
Check the diagrams \\
Allow statements without giving medians, e.g. 'medians are (just) less than 80 and less than 60 respectively' \\
If medians are stated they must be correct, otherwise possible maximum of B1 \\
B1 for \\
- 1 of the medians correct with an appropriate FT interpretation, or \\
- both medians correct without correct interpretation or with incorrect interpretation
\end{tabular} \\
\hline 12(d)(i) 100 (seconds) & B1 & \\
\hline \[
\begin{aligned}
\hline 12 \text { (d)(ii) }(0.75 \times 80=) 60 \text { (calls) } \\
72 \text { (seconds) }
\end{aligned}
\] & \[
\begin{aligned}
& \text { M1 } \\
& \text { A1 }
\end{aligned}
\] & \begin{tabular}{l}
60 seen in the answer space is awarded M1 A0 \\
If no marks, award SC1 for a misread of the graph implied from sight of answers 66, 76 or an answer between 71 and 73 (excluding 72)
\end{tabular} \\
\hline
\end{tabular}
\begin{tabular}{|c|c|c|}
\hline 13(a) \(18 / 24 \times 20\) or \(3 / 4 \times 20\) or \(20 / 24 \times 18\) or \(5 / 6 \times 18\) or \(18 \div 1.2\) or \(18-18 / 6\) or equivalent 15 (cm) & M1
A1 & \\
\hline 13(b) \(20 / 24 \times 42\) or \(5 / 6 \times 42\) or \(42 \div 1.2\) or \(42 \times 15 / 18\) or \(42 \div 18 / 15\) or \(42-42 \div 6\) or \(42 / 24 \times 20\) or \(7 / 4 \times 20\) or equivalent 35 (cm) & M1 & FT 'their scale factor' or 'their 15 ' from (a) \\
\hline \begin{tabular}{l}
35 (cm) with 'No' stated or implied \\
OR \\
States or implies 'No' with a reason, e.g. \\
'gatepost is only 30 cm wide', \\
' 35 (cm) > 30 (cm)',
\end{tabular} & E1 & FT 'their 35 ' with appropriate interpretation provided M1 previously awarded \\
\hline
\end{tabular}```

