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## GCSE MARKING SCHEME

## SUMMER 2016

## GCSE MATHEMATICS UNITISED UNIT 1 FOUNDATION TIER 4351/01

## INTRODUCTION

This marking scheme was used by WJEC for the 2016 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.

| Summer 2016 Unitised Unit 1 Foundation Tier | $\checkmark$ | Mark | Comments |
| :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Ribbon marking for 1(a) and 1(b)(i) } \\ & \begin{array}{l} \text { 1.(a) } \quad(\mathfrak{f}) 15 \times 7.5+(\mathfrak{f}) 107.5(0) \\ \end{array}=(\mathfrak{f}) 220 \end{aligned}$ |  | $\begin{gathered} \text { M1 } \\ \text { A1 } \end{gathered}$ | M0 for (£) $15 \times 7.3+(£) 107.5(0)$ |
|  |  | $\begin{aligned} & \text { M1 } \\ & \text { A1 } \\ & \hline \end{aligned}$ | FT 'their $£ 220$ '. Mark final answer. <br> SC1 for (£) 165 (or equivalent FT credit payment.) |
| 1(b)(ii) $1 / 4$ or equivalent fraction (not decimal) |  | B1 | CAO (no FT). Mark final answer. |
| 1(c) 16:30 or 4:30(p.m.) |  | B1 | Allow unambiguous notation. B0 for 04:30. B0 for 4:30a.m. |
| Ribbon marking for 2(a) and 2(b)  <br> 2(a) $\quad$ Attempt at tallying  <br>   <br>  $(14)$ <br>  11 <br>  5 <br>  10 |  | B1 <br> B2 | These need not be correct number of tallies. <br> B1 for 1 or 2 correct. |
| Ribbon marking for 2(a) and 2(b) <br> 2(b) Uniform scale for the frequency axis starting at 0 <br> Four bars at correct height. |  | B1 <br> B2 | Starting at 0 may be implied. <br> B0 for ambiguous placement of scale numbers. <br> B1 for three correct heights. FT 'their numbers' in (a). <br> If no scale shown, assume intervals of 1 from 0 to 15 for the $2^{\text {nd }} \mathrm{B} 2$ (or B1). <br> Allow FT, if possible, from a scale that was non-uniform (B0) but only because of one slip. <br> Note : If uniform scale is $0,5,10$ etc., then accept $' 12 \cdot 5<14 \mathrm{bar}<15$ ' and ' $10<11 \mathrm{bar}<12 \cdot 5$ '. <br> Penalise uneven bar widths -1 from the $2^{\text {nd }}$ B2 (or B1). |
| 2(c) Valid statement. <br> e.g. 'We do not know the highest and lowest number of days.', 'It's grouped information', 'Days are bunched (not specific), 'It only gives 30 or more', 'You don't know the exact number of days', 'It isn't specific of the actual number of days'. |  | B1 | Allow reference to not knowing either 'highest number' OR 'lowest number'. <br> Also allow any reference to 'up to 9' OR '30 or more'. Do not accept 'It's only an estimate', <br> 'It does not give the number of days' (that is, no mention of 'actual' or 'specific' number of days). |
| Ribbon marking for 3(a), 3(b) and 3(c) 3(a) $\quad 22.4\left(\mathrm{~m}^{3}\right)$ |  | B1 |  |
| Ribbon marking for 3(a), 3(b) and 3(c) <br> 3(b) <br> 4 (weeks) |  | B1 |  |
| Ribbon marking for 3(a), 3(b) and 3(c) <br> 3(c) $22 \cdot 4 \div 4$ $=5 \cdot 6\left(\mathrm{~m}^{3}\right)$ |  | $\begin{aligned} & \text { M1 } \\ & \text { A1 } \\ & \hline \end{aligned}$ | FT 'their (a)' $\div$ 'their (b)'. <br> Allow rounding when FT answer not exact. |
| 3(d) $\begin{gathered}\text { Any date between } \\ 17^{\text {th }} \text { (Aug.) and } 23^{\text {rd }} \text { (Aug.) inclusive. }\end{gathered}$ |  | B1 | Allow $24{ }^{\text {th }}$ (Aug.) |

\begin{tabular}{|c|c|c|c|}
\hline Summer 2016 Unitised Unit 1 Foundation Tier \& \(\checkmark\) \& Mark \& Comments \\
\hline \begin{tabular}{l}
4. (Number of oranges Emyr ate \(=3 / 4 \times 16=\) ) 12 \\
Use of 'Price \(\div \mathrm{N}^{\mathrm{o}}\) of oranges'. \\
(Price per orange) \\
(Single pack ) \(\mathfrak{£ 1 . 4 4 / 8 = ) \quad ( £ ) 0 . 1 8 \text { or } 1 8 ( \text { p } ) ~}\) \\
(Two packs) \(£ 2.40 / 16=\) ) (£)0.15 or \(15(p)\) \\
(Oranges eaten) \(£ 2.40 / 12=\) ) (£)0.20 or 20(p)
\end{tabular} \& \(\checkmark\)
\(\checkmark\)
\(\checkmark\)

$\checkmark$

$\checkmark$ \& \[
$$
\begin{aligned}
& \hline \text { B1 } \\
& \text { M1 } \\
& \text { A2 }
\end{aligned}
$$

\] \& | Candidates may earn these marks in the order they present their answer. |
| :--- |
| A1 for 1 or 2 correct. FT 'their 12 '. |
| Allow, in this instance only, $0 \cdot 18$ p etc. but penalise in QWC award (unless corrected to 18 p in further work). | <br>

\hline Statement that Emyr was not wise to use the special offer (as the price of the oranges eaten is more than the original cost) \& $\checkmark$ \& A1 \& For a correct comparison of 18 p with $240 \div$ 'their 12 '. ( $8<$ 'their 12 ' $<16$ ). <br>

\hline | Look for |
| :--- |
| - spelling |
| - clarity of text explanations and correct units shown |
| - the use of notation (watch for the use of ' $=$ ' and ' $\cdot \boldsymbol{\prime}$ ’ being appropriate) |
| QWC2: Candidates will be expected to |
| - present work clearly, with words explaining process or steps |
| AND |
| - make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer |
| QWC1: Candidates will be expected to |
| - present work clearly, with words explaining process or steps |
| OR |
| - make few if any mistakes in mathematical form, spelling, punctuation and grammar and include units in their final answer | \& $\checkmark \checkmark$ \& \[

$$
\begin{gathered}
\text { QWC } \\
2
\end{gathered}
$$

\] \& | QWC2. Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar. |
| :--- |
| QWC1. Presents relevant material in a coherent and logical manner, but with some errors in use of mathematical form, spelling, punctuation or grammar. OR |
| Evident weakness in organisation of material but using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar. |
| QWC0. Evident weakness in organisation of material and errors in use of mathematical form, spelling, punctuation and grammar. |
| An unsupported answer is QWC0. | <br>


\hline | Ribbon marking for 5(a) and 5(b) |
| :--- |
| 5(a) |
| Angle $\mathrm{ABC}=75^{\circ}$ |
| $\mathrm{BC}=9 \mathrm{~cm}$ | \& \& \[

$$
\begin{aligned}
& \text { B1 } \\
& \text { B1 }
\end{aligned}
$$

\] \& | Use overlay and measuring tools. Allow $\pm 2^{\circ}$. |
| :--- |
| Allow $\pm 2 \mathrm{~mm}$ | <br>

\hline $$
\begin{aligned}
& \text { Ribbon marking for 5(a) and 5(b) } \\
& \begin{array}{l}
\text { L(b) } \quad \begin{array}{l}
\text { Length } \mathrm{AC} \times 20
\end{array} \\
\qquad=190 \text { metres }
\end{array}
\end{aligned}
$$ \& \& M1

A1 \& | Use overlay and measuring tools. |
| :--- |
| M1 for clear intent to use 'length of AC $\times 20$ '. |
| ('Intent' taken to be a stated length $\times 20$ OR for an unsupported answer equal to 'their AC ' $\pm 5 \mathrm{~mm} \times 20$. FT 'their length $\pm 2 \mathrm{~mm}$ ' $\times 20$. |
| Correct units must be given. | <br>

\hline 6. | (Paris) |  | Down 5 |  |
| :---: | :---: | :---: | :---: |
| (Helsinki) <br> (Glasgow) | -1 |  | -7 |
| 7. |  |  |  | \& \& \[

$$
\begin{aligned}
& \text { B1 } \\
& \text { B1 } \\
& \text { B1 } \\
& \hline
\end{aligned}
$$
\] \& <br>

\hline 7.

$$
\begin{aligned}
16000 \div 1000 & \\
& \div 1.75 \\
& \div 8 \\
& =3.5 \text { (gallons) }
\end{aligned}
$$ \& $\checkmark$

$\checkmark$
$\checkmark$

$\checkmark$ \& | M1 |
| :--- |
| M1 |
| M1 |
| A1 | \& | Calculations must be linked to the 16000 at some stage before any M marks can be awarded. |
| :--- |
| If a calculation using any of the three values is repeated (e.g. $\div 8$ followed by $\times 8$, or $\div 8$ used twice) then M0. |
| Ignore units throughout solution. |
| Award the M1 at any stage. Allow FT if a previous M1 has not been awarded. |
| C.A.O. but allow 3(gallons) or 4 (gallons) if $3 \cdot 5$ (gallons) is seen. Mark final answer. | <br>

\hline
\end{tabular}

| Summer 2016 Unitised Unit 1 Foundation Tier | $\checkmark$ | Mark | Comments |
| :---: | :---: | :---: | :---: |
|  | $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ $\checkmark$ | M1 <br> A1 <br> M1 <br> A1 <br> M1 <br> A1 <br> M1 <br> A1 <br> B1 | FT 'their area' only if $>25$ and used consistently for cement and for sand. <br> Both required for A1. <br> FT 'their derived amounts' (but not $15 \cdot 5 \mathrm{~kg}$ or 56 kg ). <br> Both required for A1. (Rounded up for FT answers.) <br> M1 for either. FT 'their derived number of bags' (even if not whole numbers). <br> Both required for A1. <br> FT if a derived cost found for both cement and sand (but not $£ 4.87$ or $£ 2.65$ ). |
| Ribbon marking for 9(a) and 9(b) 9(a) <br> A correct point plotted at $(k, 175 k) k \neq 0$ <br> A line joining $(0,0)$ and their plotted point. Correct line drawn between $(0,0)$ and $(50,8750 \pm 50)$. |  | B1 <br> B1 <br> B1 | Allow ( $\pm £ 0.50, \pm 50 y e n$ ) i.e. ${ }^{1} / 2$ a small square'. B0 if any incorrect plots used e.g. 'dog-leg'. Allow unambiguous attempt at plotting an inappropriate point e.g. $(1,175)$ which may lead to $\mathrm{B} 1, \mathrm{~B} 1, \mathrm{~B} 0$. If no line drawn award B 1 for any 4 correct plots. CAO but award B1 if line starts at $(10,1750)$. This implies all previous marks. |
| Ribbon marking for 9(a) and 9(b) <br> 9(b) Correct method using their graph <br> e.g. $4 \times$ reading at 5000 yen <br> (£) 114 ( to nearest $£$ ) |  | M1 A1 | F.T. 'their graph'(allow $\pm 1 / 2$ a small square). <br> Must be to the nearest pound. <br> E.g. using graph to give |
| 10(a) Valid reason for misleading impression e.g. 'No scale (numbers / \%) for pass rate.' <br> Suitable example, <br> e.g. 'Porws may have gone from $10 \%$ to $20 \%$ but Gorry may (be better) at constant $80 \%$ '. 'Gorry's results are better'. |  | E1 | Must refer to there being no information regarding scale for this E1'. <br> Do not accept e.g. 'different number of pupils'. <br> Allow any form of suggestion that Gorry School (may) still have better results than Porws School. |
|  |  | E1 | 'There could be more councillors at Eastbridge' is E1. 'There could be more councillors at Westbridge' is E0. |


| Summer 2016 Unitised Unit 1 Foundation Tier | $\checkmark$ | Mark | Comments |
| :---: | :---: | :---: | :---: |
| 11(a) $\quad$ Use overlay  <br>  Position at $108^{\circ}$ from A. <br>  Position at $230^{\circ}$ from B. <br>  Position marked OR two intersecting lines. |  | $\begin{gathered} \text { M1 } \\ \text { M1 } \\ \text { A1 } \end{gathered}$ | $\pm 2^{\circ}$ (use overlay). Allow the M marks for dots, crosses or any unambiguous indication that the correct bearings have been offered. <br> F.T. if at least M1 and two intersecting lines. (Lines must originate from point $A$ and point $B$ respectively) |
| 11(b) Some comment about the different nature of the terrain between the points and the finish OR that the route was different in some way. <br> E.g. 'Uphill from B downhill from A', 'there was (insert obstacle name) between B and P ', 'Krysta wasn't able to run in a straight line', 'easier terrain', 'it was straighter', 'it was flat', 'a more direct route', 'Krysta went the wrong way' etc. |  | E1 | Do not accept any reference to different running speeds or tactics. |
| 12. 4.87 |  | B2 | B1 for sight of $4 \cdot 86(68 \ldots)$ or $4 \cdot 9(0)$ or $4 \cdot 8(0)$ or $4 \cdot 870$. |
| $\text { 13. } \quad \begin{array}{r} \text { Sight of } 35 \cdot 5(\mathrm{~kg}) \\ 23 \times 35 \cdot 5 \\ =816 \cdot 5(\mathrm{~kg}) \text { AND ' } \mathrm{No} \text { '. } \end{array}$ |  | $\begin{gathered} \text { B1 } \\ \text { M1 } \\ \text { A1 } \end{gathered}$ | F.T. only if $35 \leq$ 'their least value' $<36$. (Note SC1) Accept 'Yes' for certain allowed FTs $\begin{aligned} \text { e.g. } 23 \times & 35.9 & \text { B0 M1(FT) } \\ & =825 \cdot 7(\mathrm{~kg}) \text { AND 'Yes'. } & \text { A1 } \end{aligned}$ <br> Alternative method 1. $=23 \cdot 2 \ldots A N D \quad ' N o '$  <br> SC1 for $23 \times 36=828$ AND 'Yes'. <br> OR $\frac{825}{36}=22.9$ AND 'Yes'. <br> Note that $\quad \frac{825}{23}=35 \cdot 8$ AND 'Yes' is M1A0B0 |
| 14. Beca's total score $>21$ Beca's median score $<5$ <br> Beca's range $<7$ |  | B1 <br> B1 <br> B1 | Mark scores given in table. Possible to allow if table not completed if total $>21$. Possible to allow if enough of table completed to ensure median < 5 . <br> All of table must be completed for this B1. Penalise -1 from any marks gained if a score $>10$ is included in the table. |

