



GCSE MARKING SCHEME

AUTUMN 2019

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

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

<p>3(a) States or implies 'Can't tell' with a reason, e.g. 'diagram doesn't show how accurate the homework was', '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',</p>	<p>E1</p>	<p>Allow, e.g. 'the given information (only) shows they attempt homework' 'graph doesn't give this detail', 'diagram doesn't show data for that', 'because it doesn't specify it', 'because there is no data about it', 'it says "attempted" doesn't say if they were right or wrong', 'it (only) shows times', 'doesn't show percentages', 'no results available', 'it doesn't say if they had it wrong or not', 'no marks'</p> <p>Do not accept, e.g. 'we don't know how many marks there are to be earned', 'it shows frequency', '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'</p>
<p>3(b) $5 + 9 + 11 + 7 + 4$</p> <p style="text-align: center;">36 (students)</p>	<p>M1 A1</p>	<p>Allow M1 if one error in working with 5 numbers (check diagram also, but intention to add must be clear) CAO</p>
<p>3(c) $\frac{11}{25}$</p>	<p>B2</p>	<p>ISW B1 for .../25 or 11/... provided not from incorrect working (e.g. $4 + 7 + 11 = 22$, then $22/30 = 11/15$ is B0) B1 for an answer of 44% if 11/25 not previously seen</p>
<p>4(a) 20 (knots)</p>	<p>B1</p>	
<p>4(b) $2.3(0) + 2.3(0) + 1.15$ or $2.30 + 3.45$ or 2×2.875 or 5×1.15 or equivalent</p> <p style="text-align: center;">5.75 (miles per hour)</p>	<p>M1 A1</p>	<p>Any correct method ISW</p>

<p>5. (Fresh water charge £) $20 \times 1.1(0)$</p> <p>(Waste water charge £) $0.80 \times 20 \times 1.50$</p> <p>(Total bill £22 + £24 =) (£) 46</p>	<p>M1</p> <p>M2</p> <p>A1</p>	<p>(= £22)</p> <p>(= £24) M1 for either $0.80 \times 20 (= 16\text{m}^3)$ or $20 \times 1.50 (= 30)$</p> <p>CAO</p> <p>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) OR Award M1 and SC1 for any one of the following:</p> <ul style="list-style-type: none"> • sight of (£)22 and (£)17.6(0) ($22 \& 0.8 \times 22$) • an answer of (£)39.6(0) ($22 + 0.8 \times 22$)
<p>6. (Cost of buying pears is £) 2.5×3.40 or equivalent</p> <p>(£)8.5(0)</p> <p>(Cost of apples is £) $12.40 - 8.50$</p> <p>(£)3.9(0)</p> <p>(Cost of 1 kg of apples is £) $3.9(0) \div 3$</p> <p>(£) 1.3(0)</p>	<p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p>	<p>Accept 850p or £8.50p Do not accept 8.50p or £850</p> <p>FT 'their £8.50' FT 'their 8.50' provided \neq (£)3.40</p> <p>FT 'their £3.90' FT 'their 3.90' provided \neq whole number multiple of 3 FT provided correct to a penny (rounded or truncated)</p> <p>(Note: $12.40 - 3.40 = 9$, $9 \div 3 = (\text{£})3$ is awarded M0 A0 M1 A0 M1 A0)</p>
<p>Organisation and communication</p> <p>Writing</p>	<p>OC1</p> <p>W1</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>8(a) Short diagonal 40 (cm) and longer diagonal 50 (cm)</p> <p>(longer diagonal should be $>$) 1.20×40 or equivalent, OR (shorter diagonal should be $<$) $50 \div 1.2$ OR $(100 \times) \frac{50}{40}$</p> <p>(longer diagonal should be $>$) 48 (cm), OR (shorter diagonal should be $<$) 41.6(6.. cm) OR $((100) \times \frac{50}{40} =) 1(.)25$</p> <p>Conclusion, e.g. 'Yes (certain to fly in strong wind)' 'Yes as $48 <$ longer diagonal' 'Yes ($125\% > 120\%$)' 'Yes ($1.25 > 1.2(0)$)'</p>	<p>B1</p> <p>M1</p> <p>A1</p> <p>E1</p>	<p>Check diagram</p> <p>FT 'their 40' and 'their 50' provided</p> <ul style="list-style-type: none"> at least one of these values is correct 'their 40' \neq 20 'their 50' \neq 22 or 28 <p>FT</p> <p>FT provided M1 awarded</p> <p>Do not accept working for area seen in (a) unless used in (b)</p>																																
<p>8(b) (Method to calculate area) e.g.</p> <ul style="list-style-type: none"> $\frac{1}{2} \times 40 \times 50$ $2 \times \frac{1}{2} \times 20 \times 22 + 2 \times \frac{1}{2} \times 20 \times 28$ (=440 +560) $\frac{1}{2} \times 40 \times 22 + \frac{1}{2} \times 40 \times 28$ <p>(Area of the kite) 1000 (cm²)</p> <p>(Length of tail) 3.1 (m)</p>	<p>M2</p> <p>A1</p> <p>B1</p>	<p>FT 'their 40' and 'their 50'</p> <p>Allow if working for area seen in (a) and used in (b)</p> <p>M1 for correct method for at least 2 of the 4 possible triangles, e.g. implied from sight of 20×22, 440, 20×28 or 560</p> <p>CAO</p> <p>FT provided at least M1 previously awarded for correct length selected from choice of the correct group</p>																																
<p>9(a) Method of comparison, e.g.</p> <ul style="list-style-type: none"> per 50g for 2000g <p>Correctly evaluated comparison for 2 of the 3 sizes</p> <p>Correctly evaluated comparison for all sizes, may be different methods for different stages, AND conclusion '(400g) Fusilli is best value for money'</p>	<p>M1</p> <p>A1</p> <p>A1</p>	<p>Needs to show attempt to compare at least 2 of the 3, e.g. comparing 500g Allow for sight of $2 \times (0.)65$</p> <p>Allow for sight of (£)1.3(0) or 130(p) Ignore incorrect units</p> <table border="1" data-bbox="858 1391 1449 1525"> <thead> <tr> <th></th> <th>50g</th> <th>100 g</th> <th>1 kg</th> <th>2000g</th> </tr> </thead> <tbody> <tr> <td>Str 500g</td> <td>12.5 p</td> <td>25p</td> <td>£2.50</td> <td>£5</td> </tr> <tr> <td>Fus 400g</td> <td>12 p</td> <td>24p</td> <td>£2.40</td> <td>£4.80</td> </tr> <tr> <td>Rig 250g</td> <td>13 p</td> <td>26p</td> <td>£2.60</td> <td>£5.20</td> </tr> </tbody> </table> <table border="1" data-bbox="858 1554 1390 1688"> <thead> <tr> <th></th> <th>g per p</th> <th>g per £</th> </tr> </thead> <tbody> <tr> <td>Str 500g</td> <td>4 g</td> <td>400 g</td> </tr> <tr> <td>Fus 400g</td> <td>4.166... g</td> <td>416.66... g</td> </tr> <tr> <td>Rig 250g</td> <td>3.846... g</td> <td>384.61... g</td> </tr> </tbody> </table> <p>Consistent units that are not obviously incorrect are required, or allow no units given</p> <p>Examples:</p> <ul style="list-style-type: none"> Comparison of 500g with 250g then 250g with 400g not a full comparison of all 3 sizes Comparison of 500g and 250g at 500g and then 500g and 400g at 2000g, possible M1, A1, A1 		50g	100 g	1 kg	2000g	Str 500g	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		g per p	g per £	Str 500g	4 g	400 g	Fus 400g	4.166... g	416.66... g	Rig 250g	3.846... g	384.61... g
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<p>9(b)(i) $3 \times 48 \div 4$ 36 (chillies)</p>	<p>M1 A1</p>	
<p>9(b)(ii) 0.88 $(\times 2) \times 20 \div 4$ $\div 2.2$ 4 (kg)</p>	<p>M1 M1 A1</p>	<p>M marks can be awarded in either order (= (2 ×) 4.4) Or equivalent full method that could lead to a correct answer (Note: $2 \times 0.88 \times 20 \div 4 = 2 \times 4.4$ or 5×1.76) CAO If no marks, award SC1 for sight of ($2 \times 0.88 =$) 1.76 (lbs)</p>
<p>9(c) Conversion to cm, e.g. $5 \times 1000 \times 100$ (× 7) 3.5×10^6 (cm)</p>	<p>M1 A2</p>	<p>(= 500 000 (× 7)) A1 for any one of the following: <ul style="list-style-type: none"> • an answer of 3 500 000 (cm) • 3 500 000 (cm) implied by incorrect standard form, e.g. 35×10^5 • for correct expression of 'their 3 500 000' in standard form provided from $5 \times 1000 \times 100 \times 7$ • if 7 has been omitted, for an answer of 5×10^5 If no marks, award SC1 for 'their number of cm', n, provided $n < 0.001$ ($n < 1 \times 10^{-3}$) or $n > 1000$ ($n > 1 \times 10^3$), correctly written in standard form</p>
<p>10. Sight of 300 000 (pesos) or 100 000 (pesos) or sight of 500 000 – 200 000 and 600 000 – 500 000 (Tax at 10%) $0.10 \times (500\,000 - 200\,000)$ or $0.10 \times 300\,000$ or equivalent 30 000 (pesos) (Tax at 35%) $0.35 \times 100\,000$ or or $0.35 \times (600\,000 - 500\,000)$ or equivalent 35 000 (pesos) (Total tax due) 65 000 (pesos)</p>	<p>B1 M1 A1 M1 A1 B1</p>	<p>Ignore £ or other currency for pesos May be implied Allow for sight of 200 000 – 500 000 and 500 000 – 600 000 FT use of 'their (500 000 – 200 000)' from an error in subtraction CAO, not FT FT use of 'their (600 000 – 500 000)' as 'their 100 000' from an error in subtraction CAO, not FT FT 'their 30 000' + 'their 35 000' provided both M1 marks previously awarded 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</p>

<p>11(a) Sight, for the garage, of 2.55(m) or 255(cm) Sight ,for the boxes, of 35(cm) and 52.5(cm) $255 - (5 \times 35 + 52.5)$ or $255 - 175 - 52.5$ or $255 - 227.5$ or equivalent 27.5 (cm) or 0.275 (m)</p>	<p>B1 B1 M1 A1</p>	<p>Provided not from incorrect working (i.e. $40 \times 5 + 55 = 255$ is awarded B0) FT provided $250 < \text{'their 255'} \leq 260$ or $2.5 < \text{'their 2.55'} \leq 2.6$ and provided $30 \leq \text{'their 35'} < 40$ and $50 \leq \text{'their 52.5'} < 55$ FT from consistent place value error for a similar range for 'their bounds' CAO. ISW</p>
<p>11(b) $56 \div 0.7$ or equivalent (£) 80</p>	<p>M1 A1</p>	
<p>12(a) 104 seconds</p>	<p>B1</p>	
<p>12(b) 86 seconds</p>	<p>B1</p>	
<p>12(c) Sight of median 1st July 2018 78 (seconds) AND Sight of median 1st July 2019 56 or 57 (seconds) AND States or implies 'Yes'</p>	<p>B2</p>	<p>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</p> <ul style="list-style-type: none"> • 1 of the medians correct with an appropriate FT interpretation, or • both medians correct without correct interpretation or with incorrect interpretation
<p>12(d)(i) 100 (seconds)</p>	<p>B1</p>	
<p>12(d)(ii) $(0.75 \times 80 =) 60$ (calls) 72 (seconds)</p>	<p>M1 A1</p>	<p>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)</p>

<p>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</p> <p style="text-align: center;">15 (cm)</p>	<p>M1</p> <p>A1</p>	
<p>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</p> <p style="text-align: center;">35 (cm)</p> <p style="text-align: center;">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)',</p>	<p>M1</p> <p>A1</p> <p>E1</p>	<p>FT 'their scale factor' or 'their 15' from (a)</p> <p>FT 'their 35' with appropriate interpretation provided M1 previously awarded</p>