



---

# **GCSE MARKING SCHEME**

---

**SUMMER 2018**

**GCSE (NEW)  
MATHEMATICS - NUMERACY  
UNIT 1 - INTERMEDIATE TIER  
3310U30-1**

## **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: Intermediate Tier Summer 2018	Mark	Comment										
1(a) 57.5 (miles)	B1											
1(b) Method, e.g. $4 \times 230$ , $8 \times 115$ , or equivalent 920 (miles)	M1  A1	FT 16 x 'their 57.5'  Useful FT information: <table><tr><th>FT</th><th>Miles</th></tr><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></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											
2(a) $2 \times 5.60 + 2 \times 2.30$ (£) 15.80 (£) 4.20	M1 A1 A1	FT 20 – 'their 15.80' correctly evaluated provided M1 awarded  <i>Alternative:</i> $20 - 2 \times 5.60 - 2 \times 2.30$ M2 (£)4.20 A1  Ignore if working with both columns, but only award final A1 if unambiguous final answer  If no marks, award SC1 for an answer of <ul style="list-style-type: none"><li>(£)1.9(0) from including charge for Anton (under 3), or</li><li>(£)2.14 from incorrect column used</li></ul>										

<p>2(b) (Adult extra 10% of £5.60 is £) (0.)56</p> <p>(Adult with extra 10% is £) 6.16 OR (Adult pays too much by) <math>6.4(0) - 5.6(0) - (0).56</math></p> <p>(Adult pays too much by) 24p or £0.24</p> <p>Organisation and communication</p> <p>Writing</p>	<p>B1</p> <p>B1</p> <p>B1</p> <p>OC1</p> <p>W1</p>	<p>Ignore units. (£)1(.).12 implies 56(p)</p> <p>(£)12.32 implies (£)6.16</p> <p>FT 'their 56p' provided 10% of £5.60 attempted</p> <p>CAO. B0 for 48(p) If units are given they must be correct</p> <p>Penalise units not given in (OC)W</p> <p>For OC1, candidates will be expected to:</p> <ul style="list-style-type: none"> <li>• present their response in a structured way</li> <li>• explain to the reader what they are doing at each step of their response</li> <li>• lay out their explanations and working in a way that is clear and logical</li> <li>• write a conclusion that draws together their results and explains what their answer means</li> </ul> <p>For W1, candidates will be expected to:</p> <ul style="list-style-type: none"> <li>• show all their working</li> <li>• make few, if any, errors in spelling, punctuation and grammar</li> <li>• use correct mathematical form in their working</li> <li>• use appropriate terminology, units, etc.</li> </ul>
<p>2(c) Intention to calculate</p> <p><math>714\,000 \times 2 \div 7</math></p> <p><math>204\,000 \text{ (m}^2\text{)}</math></p>	<p>M1</p> <p>A1</p>	<p>May be seen in stages</p> <p>Sight of <math>2/7 \times 714\,000</math> is insufficient for M1, there must be an intention to <math>\div 7</math> and <math>\times 2</math>, e.g. allow from sight of incorrect responses 24000, or <math>2 \times 12000</math></p> <p>Mark final answer</p>



4(a)(i) 10:13	B1	
4(a)(ii) 09:36	B1	
4(b) (Leaves Grainsey at ) 13(:)00 or 1p.m.	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 <b>further</b> times for bus 6 <b>and</b> 4 <b>further</b> 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 <math>2 \times 2 \times 3 \times 3 \times 5</math> =) 180 (minutes) or 3 hours OR Listing 7 <b>further</b> times for bus 6 <b>and</b> 3 <b>further</b> times for bus 7 with at most one error in total (FT with that 1 error to check further times) OR Listing 5 <b>further</b> times for bus 6 <b>and</b> 2 <b>further</b> times for bus 7 with no errors.</p> <p>B1 for sight of <math>20 = 2 \times 2 \times 5</math> with <math>45 = 9 \times 5</math> OR for sight of <math>20 = 4 \times 5</math> with <math>45 = 3 \times 3 \times 5</math> OR for sight of <math>20 = 4 \times 5</math> with <math>45 = 9 \times 5</math> OR Listing 3 <b>further</b> times for bus 6 <b>and</b> 2 <b>further</b> 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	

5(a)(i) (£) 20 (£) 30	B1 B1	If B0, B0, award SC1 for (£)30 followed by (£)20
5(a)(ii)  16 (years) 0 (months) 13 (years) 6 (months)	B3	Accept 16 (years) with months left blank throughout  B2 for (in order) <ul style="list-style-type: none"> <li>16 (years) 0 (months) with 13 (years) 5 (months), or</li> <li>13 (years) 6 (months) with 16 (years) 0 (months), or</li> <li>16 (years) 0 (months) with 13½ (years) 0 or 6 (months)</li> </ul> B1 for <ul style="list-style-type: none"> <li>either answer correct in appropriate statement accept 16 (years) 'blank' (months), or</li> <li>13 (years) 5 (months) followed by 16 (years) 0 (months), or</li> <li>13½ (years) 0, 6 (months) followed by 16 (years) 0 (months)</li> </ul>
5(b)(i) 13 (years old)	B1	CAO
5(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',  OR Indicates or implies 'No' with a reason, e.g. 'there is no correlation', 'there is no relationship between age and amount'	E1	Do not accept 'Yes, he is the youngest' Accept 'Yes' with a reasonable true comparison If amounts are quoted they must be correct unless accompanied by a correct comparative statement
6. 112 (grams of butter) 98 (grams of flour) 1704 (millilitres of milk) 252 (grams of cheese)	B1 B1 B1 B1	





<p>8(a) (Total area =)  <math>15 \times 15 + 4 \times 5</math> or <math>20 \times 4 + 11 \times 15</math>  or <math>20 \times 15 - 11 \times 5</math> or equivalent  (Volume = total area ) <math>\times 0.2</math></p> <p>(Volume =)      <math>49 \text{ (m}^3\text{)}</math></p>	<p>M1    Note: check diagram for the area  Accept any correct area calculation</p> <p>M1    Allow for ‘their total area’ <math>\times 0.2</math> where ‘their area’ includes a product, or for one rectangular (or square) area <math>\times 0.2</math></p> <p>A2    FT from 1 measurement error in a sum or difference of two products, i.e. only one measurement incorrect within one product (M0 M1 A2 is possible to award)</p> <p>A1 for calculations with evaluated terms as shown (in bold and underlined)</p> <p>FT from M1, M0  (area <math>225 + 20</math> or <math>80 + 165</math> or <math>300 - 55</math>)  <u><b>245</b></u>(<math>\text{m}^2</math>),</p> <p>OR</p> <p>FT from M1, M1:  for one area product correctly evaluated within ‘their area’  AND <math>\times 0.2</math> correctly evaluated</p> <p><u><b>45</b></u> + <math>4 \times 5 \times 0.2 \text{ (m}^3\text{)}</math>, or                          <math>15 \times 15 \times 0.2 + </math><u><b>4</b></u>(<math>\text{m}^3</math>), or  <u><b>16</b></u> + <math>11 \times 15 \times 0.2 \text{ (m}^3\text{)}</math>, or                          <math>20 \times 4 \times 0.2 + </math><u><b>33</b></u>(<math>\text{m}^3</math>), or  <u><b>60</b></u> – <math>11 \times 5 \times 0.2 \text{ (m}^3\text{)}</math>, or                          <math>20 \times 15 \times 0.2 - </math><u><b>11</b></u> (<math>\text{m}^3</math>)</p> <p>Accept implied correctly evaluated area product, e.g. <math>4 \times 5 + 15 \times 15 = 20 + 125 = 145</math>  With <math>145 \times 0.2 = 29 \text{ (m}^3\text{)}</math>, award M1, M1, A1 (although 125 is incorrect)</p>
<p>8(b) <math>\frac{2}{3} \times 6</math>      OR    <math>\frac{2}{3} \times 45</math>                          <math>\times 45</math>                         <math>\times 6</math>                          or equivalent</p> <p>+ 35</p> <p>(£) 215</p>	<p>M1    Allow sight of <math>\frac{2}{3}</math> of 6 or <math>\frac{2}{3}</math> of 45  m1    (= <math>4 \times 45</math> or <math>30 \times 6</math> or <math>\frac{2}{3} \times 270</math>)            (= 180)</p> <p>m1    Intention to add 35  Depends on M1 only</p> <p>A1    CAO</p>

9. $49 \times 20$ $(= \text{£}) 980$ % Interest $\frac{980 - 400}{400} (\times 100)$ or $\frac{980}{400} (\times 100) - 1(\times 100)$  <div style="text-align: right;">145 (%)</div>	M1 A1 m1   A1	FT 'their 980' provided M1 previously awarded Award m1 for complete method to show what percentage 580 is of 400
10(a) $190^\circ$	B1	
10(b) $332^\circ$	B1	
10(c)(i) $8400 \div 200$ 42 (population/km <sup>2</sup> )	M1 A1	Or equivalent CAO
10(c)(ii) $5 \times 8400 \div (3 + 4 + 5)$ 3500 (people)	M1 A1	Full method required Accept embedded answer, provided clearly Gwyndir
11(a) $0.02 \times 3000 + 3000$ (= £3060) or equivalent  <div style="text-align: right;"><math>0.02 \times 3060 + 3060</math> (£)3121.2(0)</div>	M1  M1 A1	Allow for sight of 3060 (irrespective of labelling) or for sight of 3120 (simple interest)  FT 'their 3060', mark is for the method (= £61.2(0) + £3060) CAO  <i>Alternative:</i> <i>Sight of <math>1.02^2 \times 3000</math></i> M1 <i><math>1.0404 \times 3000</math></i> M1 <i>FT 'their 1.0404' incorrectly evaluated</i> <i>(£)3121.2(0)</i> A1 CAO  If no marks, award SC1 for (£)2881.2(0) (from depreciation)
11(b) $72 \div 0.8$ or $100 \times 72 \div 80$ (£) 90	M1 A1	Accept an unsupported answer of (£)90 Allow M1, A1 for (£)90 found from trial & improvement

<p>12. (Maximum cup height )12.5 (cm)  <b>AND</b> (Maximum gap) 4.5 (cm)  OR  For <b>use</b> of 12.43 to 12.499...  <b>AND</b> 4.43 to 4.499...</p> <p>(Maximum height of 7 coffee mugs is)  <math>12.5 + 6 \times 4.5</math></p> <p style="text-align: center;">(=)      39.5 (cm)</p> <p>Conclusion or reason, e.g.  '(as 39.5 cm &gt; 39 cm) Michelle cannot  be certain the mugs will fit'</p>	<p>B1</p> <p>M2</p> <p>A1</p> <p>E1</p>	<p>For sight of 12.5 and 4.5 (ignoring any  least measures given)</p> <p>FT 'their 12.5' and 'their 4.5' provided in  ranges &gt;12 to 12.5 and &gt;4 to 4.5  respectively</p> <p>Award M1 <b>only</b> (A0) for <math>12.5 + 7 \times 4.5</math> (A0)</p> <p>Depends on at least 2 marks previously  awarded  FT 'their 39.5' irrespective if &lt;39 or &gt;39</p> <p><b>An unsupported 39.5 is no marks as no  working shown</b></p>
13(a) 20 to 25 minutes	B1	
<p>13(b) 'No' indicated or unambiguously  implied, with a reason, e.g.  'only shows data for groups',  'it was in the group 40 to 45 minutes',  'doesn't show how many runners  finished in 45 minutes',  'the last 2 runners took between 40 and  45 minutes'</p>	E1	<p>Do not accept any reason implying 'Yes'</p> <p>Allow 'No' with, e.g.  'the graph shows the cumulative frequency  not the actual times',  'doesn't show the actual times'</p> <p>Do not accept, e.g.  'it goes to the nearest 5 minutes',  'it shows frequency not times of results',  'it doesn't show how many runners  finished between 40 and 45 minutes'.  'because it can be an average'</p>
<p>13(c) <b>70%</b> (within 30 minutes)'  (80% within) <b>35</b> (minutes)'</p>	<p>B1</p> <p>B1</p>	
<p>13(d) Difference 26 - 24.5 to 24.8  Answer in the range</p> <ul style="list-style-type: none"> <li>• 1.2 to 1.5 (minutes), or</li> <li>• 1 minute 12 seconds to  1 minute 30 seconds</li> </ul>	<p>M1</p> <p>A1</p>	<p>Do not accept an answer in the correct  range from incorrect working  Mark final answer  If units are given they must be correct</p>

14(a) 25% of 3000 or $0.25 \times 3000$ or equivalent  750 (people)	M1  A1	<i>If no marks, award SC1 for an answer of 2250 (people)</i>
14(b) Idea to consider fraction or decimal part between the median & UQ $\frac{2}{3} \times 0.25 \times 3000$ or equivalent 500 (people)	M1 m1 A1	For example, sight of $10/15 (= \frac{2}{3})$ or $5/15 (= \frac{1}{3})$ FT 'their 750' from (a)'
14(c)  Indicates or unambiguously implies 'North Entrance' with a suitable reason, e.g. 'upper quartile is less than for the South Entrance', '3/4 took less than 44 minutes to queue at the North entrance', North as $\frac{3}{4}$ took less than 60 minutes at the South Entrance',  OR Indicates or unambiguously implies 'South Entrance' with a suitable reason, e.g. '25% people in 20 minutes at South entrance compared with 24 minutes at the North entrance'	E1	Do not ignore additional incorrect statements  Implies that the majority of people got through quicker at the North Entrance  Allow, e.g. 'North Entrance, most people 44 minutes whilst South it was 60 minutes'  Do not accept indication of 'South Entrance' with a reason based on the team being slower, e.g. 'time was taken to search of handbags'