GCSE MARKING SCHEME

AUTUMN 2018

GCSE
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 (3310U10-1)

AUTUMN 2018 MARK SCHEME

GCSE Mathematics – Numeracy Unit 1: Foundation Tier	**Mark**	**Comment**
1(a)(i) 4035(.00)	B1	Answer may be written on the lines. Answer in the box takes precedence to one on lines. Accept 4,035 Ignore other commas Do not allow 4.035
1(a)(ii) No indicated and correct reason given, e.g. 'It should be four thousand not ten thousand.' 'He rounded it up when it should be rounded down.' 'No, not correct to the nearest ten thousand' 'No, it is less than ½ of 10000' 'No it is (about) 6000 short'	E1	Allow 'It should be five thousand not ten thousand.' 'Much too big' 'Too far away' 'No, it is not near ten thousand' 'No he needs 5965 to reach ten thousand' 'No, because it is 5965 off' 'No, it is nowhere near ten thousand pounds' 'No because it's nearer 5000' No, it's below 5000' 'No, it is under 5 so would round lower' '10000 is not near 4035' 'No, 4035 is not close enough to 10000' Do not allow 'No, the amount is 4035' 'No, the number is below 10000 so is not a good estimate'

1(b)(i) Suitable explanation given, e.g. 'It means that he is in debt (by £21.00).' 'He owes the bank (£21).' The account is overdrawn (by £21) 'He borrowed £21 from the bank' 'He took too much money out of the bank so is in debt'	E1	Allow 'He's used money he hasn't got' 'He used more than what was in his bank' 'He was overdue by £21' 'This means Rob has to pay back the (-)£21' 'It means that that is how much under zero he has.' 'Has withdrawn money out of his account but now has to pay it back' 'Has gone below his balance and has to pay it back' 'He has spent more money than he had in his bank' 'Not enough money to pay' 'he has spent £21 more than he has got' Do not accept 'He has gone below his balance' 'Every time there's a new date the balance is decreasing' 'Money not fully paid' 'Has gone under budget' 'He went over his limit' '21 has been taken out' 'He has nothing in his bank' 'If the balance is a -, it means that all the money in the account has been spent' 'This means he has -21 out if his account' 'He owes 21 to GM Shoes as he had only 6.29 in his account'
1(b)(ii) -21 + 50 or 50 - 21 (£)29(.00)	M1 A1	Clear indication that they are adding 50 to -21 or subtracting 21 from 50
2(a) FALSE FALSE FALSE TRUE	B2	Award B2 for all correct Award B1 for 3 correct
2(b) 12	B1	
2(c) 93 – 24 69	M1 A1	Do not award M1 for 93 and 24 without an attempt at subtraction Award M1 A0 for -69
2(d) GD = GF - GA	B1	Answer may be seen on an answer line

3(a) (Wave Bay Hotel) 100 × 45 + 275 (Jenkins Hotel) 100 × 38 + 900 (£)4775 AND (£)4700 AND Castle View Hotel stated	M1 M1 A2	May be seen in stages Award A1 for either (£)4775 or (£)4700 if at least M1 awarded Note: Only award A1 if both correct answers given and Castle View Hotel is **not** given ISW for money for flowers
3(a) Alternative method. Working with what is left. *(Wave Bay Hotel)* *5000 – (100 × 45 + 275)* *(Jenkins Hotel)* *5000 – (100 × 38 + 900)* *(£)225 AND (£)300 AND (£)430 AND Castle View Hotel stated*	 *M1* *M1* *A2*	*May be seen in stages* *Award A1 for either (£)225 or (£)300 if at least M1 awarded* *Note:* *Only award A1 if only (£)225 and (£)300 given whether Castle Hotel is stated or not*
Organisation and communication Writing	OC1 W1	For OC1, candidates will be expected to: • 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 For W1, candidates will be expected to: • 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.

3(b) (Amount to pay) (£)2400 (10%=) (£)240 (2400 – 240=)(£) 2160 (£)2160 ÷ 20 (£)108	B1 B1 B1 M1 A1	 FT 10% of 'their 2400' including use of 3400 for 2400 FT 'their 2400' - 'their 240' correctly evaluated. Including use of 3400 for 2400. Allow this B1 if £1000 taken off here and not at the start. FT 'their 2160' ÷ 20 Example of common incorrect answers: 3400 B0 340 B1 (3400 – 340=) 3060 B1 3060 ÷ 20 M1 (£)153 A1 Example of common incorrect answers: 3400 B0 340 B1 (3400 – 340 - 1000=) 2060 B1 2060 ÷ 20 M1 (£)103 A1 Apply FT as above
3(b) Alternative method *(Amount to pay) (£)2400* *2400 ÷ 20* *(£)120* *(10%=) (£)12* *(120 – 12=)(£)108*	 *B1* *M1* *A1* *B1* *B1*	 FT if £1000 not taken off. *FT 10% of 'their (£)120* *Example of common incorrect answers:* *3400 B0* *3400 ÷ 20 M1* *(£)170 A1* *(10%) 17 B1* *(170 – 17=) (£)153 A1* Apply FT as above

3(c)(i) 5:45pm – 2 hours – 30mins 3:15 (p.m) or 15:15	 M1 M1 A1	M marks can be awarded in any order Sight of 3:45 implies M1 FT their 3:45' - 30 mins Or Sight of 5:15pm implies M1 FT 'their 5:15' – 2 hours Note: award M2 for 5:45 pm – 2 hours 30 mins Or 5:45 pm – 2 ½ hours Award M1M0 for 5– 2hrs30mins – 45mins However Award M1M1 for 5– 2hrs30mins + 45mins CAO. Do not accept 3:15 a.m or 03:15
3(c)(ii) 17:45	B1	
4(a) 4 (cm), 5 (cm) and (6 (cm) in any order	B1	
4(b) 4 × 4 + 4 × 5 + 4 × 6 or equivalent 60 (cm) 3 × 60 ÷ 2 or equivalent 90 (p) or £0.9(0)	M1 A1 M1 A1	FT 'their width, height and length' provided 3 values are used FT 1.5 × 'their 60 (cm)' (irrespective if dimensionally incorrect) provided derived from use of 'their 3 values' Depends on both M marks Allow £0.90p
4(b) Alternative method: *4×1.5, 5×1.5 and 6×1.5* *6(p), 7.5(p) and 9(p)* *4 ×(6 + 7.5 + 9)* *90(p) or £0.9(0)*	 *M1* *A1* *M1* *A1*	 *FT 'their width, height and length' provided 3 values are used* *FT use of 'their 6, 7.5 and 9'* Allow £0.90p *Accept FT rounded or truncated to pence, may be expressed in £s*

5(a) Reflex	B1	
5(b) For 100˚ (± 2˚) in the correct place For 210˚ (± 2˚) in the appropriate place (at the end of 'their 6cm' line) For 6cm (± 2mm) AND 5cm (± 2mm) lines in the correct place (with 6cm 1st and 5cm 2nd)	B1 B1 B1	Measurements must be seen in the correct order
5(c) (Did not complete=) $27 \div 9 \times 2$ 6 (Did complete = 27 – 6 =) 21	M1 A1 A1	FT 'their 6' provided M1 awarded Note: Award M1 A0 A0 for 6/27 Award M1 A1 A0 for 21/27
5(c) Alternative method *(Fraction that did complete =) 7/9* *$27 \div 9 \times 7$* *21*	*B1* *M1* *A1*	*May be implied by M1*

<table>
<tr><td>6(a)(i) 3</td><td>B1</td><td></td></tr>
<tr><td>6(a)(ii) 2</td><td>B1</td><td></td></tr>
<tr><td>6(b) Idea that 5 books weigh 1750 (g)
350 (g)</td><td>B1
B1</td><td>ISW</td></tr>
<tr><td>6(c)(i) $10x = 2x + 3200$ or $8x = 3200$
or $x = 3200 \div 8$ or equivalent</td><td>B1</td><td>ISW, although allow $x = 8/3200$ if followed by $x = 400$.
B0 for $x = 8/3200$ or ‘400’ alone
Allow $x = 400$
Accept inclusion of unit ‘g’ throughout
Do not accept $x = 1/8$ of 3200</td></tr>
<tr><td>6(c)(ii) $12 \times 3200 \div (10 - 2)$
or equivalent shown in stages

4800 (g)</td><td>M1

A1</td><td>FT from ‘their first equation’ in the form $ax = bx + c$</td></tr>
<tr><td>7(a) Method of comparison, e.g. per 1 tile or for 5 tiles, or similar

Correctly evaluated comparison for 2 of the 3 packages

Correctly evaluated comparison for all packages, may be different methods for different stages

Conclusion ‘(box of) 40 (middle) is best value for money’</td><td>M1

A1

A1

E1</td><td>Needs to show attempt to compare at least 2 of the 3 packages, e.g.
Comparing 100 tiles:
100 tiles for £29 with
• 40 tiles: £11.20 × 2.5 (= £28), or
• 25 tiles: £7.50 × 4 (= £30)

Ignore incorrect units
<table>
<tr><td>Number of tiles</td><td>per 1 tile</td><td>per 5 tiles</td><td>per 200 tiles</td></tr>
<tr><td>25</td><td>30 p</td><td>£1.50</td><td>£60</td></tr>
<tr><td>40</td><td>28 p</td><td>£1.40</td><td>£56</td></tr>
<tr><td>100</td><td>29 p</td><td>£1.45</td><td>£58</td></tr>
</table>

<table>
<tr><td>Number of tiles</td><td colspan="3">Tiles per pence</td></tr>
<tr><td>25</td><td>25/750</td><td>1/30</td><td>0.0333...</td></tr>
<tr><td>40</td><td>40/1120</td><td>1/28</td><td>0.0357...</td></tr>
<tr><td>100</td><td>100/2900</td><td>1/29</td><td>0.3448...</td></tr>
</table>
(× 100 for tiles per £)

If units are given they must be correct
Consistent units that are not obviously incorrect are required, or allow no units given
Depends on at least M1, A1 previously awarded

FT provided all three boxes are appropriately compared (all three or as two pairs) and at least M1 A1 previously awarded

Sight of looking at the difference in costs is likely to be M0 A0 A0</td></tr>
<tr><td>7(b) Selecting the 3 boxes:
A (Square)
B (Rhombus)
D (Right-angled triangle)</td><td>B2</td><td>In any order
B1 for selecting 2 of the 3 correct boxes

B0 for selecting more than 3 boxes</td></tr>
</table>

8(a)10(%) and 40(%) in either order 5(%)	B1 B1	
8(b) A suitable explanation based on any one of: • no correlation • no **data** for towns above 7000 • small sample e.g. 'no correlation', 'no pattern (to the results)', 'no relationship (between the number of people and the percentage of rubbish)'	E1	Accept, e.g. 'outside the range of data collected', 'only data between 2000 to 7000 people', 'results vary too much', 'the data stops at 7000' Allow, e.g. 'not enough data', 'no data for a town this **big**', 'was **only** done for first week in July', 'there are **only** 8 towns' Do not accept, e.g. 'no town with 9000 people', 'no data at 9000 people', 'it is off the graph', 'graph doesn't reach 9000 people', 'not suitable', 'may not be accurate', 'unpredictable', 'no data for 8000', 'each town is different', 'no data for a town of this size', '9000 is not a small town'
9(a)(i) Listing common multiples showing at least: • 42, 84 **and** • 24, 48,72 OR 2×3×7 (=42) AND 2×2×2×3 (=24) Complete listing: • 42, 84, 126, 168 **and** • 24, 48,72, 96, 120, 144, 168 OR LCM 2 × 2 × 2 × 3 × 7 (= 168) (= 4 × 42 and 7 × 24)	B1 B1	Accept **6** × 7 (=42) AND 4 × **6** (=24), i.e. must have sight of factors which could lead to LCM being given, so do not accept e.g. 2 × 21 and 2 × 12 without further breakdown Accept **6** × 4 × 7 or **6** × 2 × 2 × 7 If no marks, award SC1 for sight of 4 × 42 = 168 AND 7 × 24 = 168 (as least not shown), or indication that number of buttons and pins both 168
9(a)(ii) 168	B1	CAO

<table>
<tr>
<td>9(b)(i) (Sticky tape needed is)
2.5 × 4 × 42 or 2.5 × 7 × 24 or 2.5 × 168
(= 420 cm)
(Number of rolls of sticky tape is)
(2.5×4×42) ÷ 60 or (2.5×7×24) ÷ 60
or (2.5×168) ÷ 60 or 420 ÷ 60
7 (rolls needed)</td>
<td>M1

M1

A1</td>
<td>FT ‘their 168’ from (a)(ii)

FT ‘their 168’ from (a)(ii)
Allow sight of repeated addition of 60s, need to show 60, 120, 180, 240, 300
Only FT if number of rolls is >1
Must be rounded up to a whole number of rolls

Allow 2.5cm rounded to 2cm or 3cm, FT as with use of 2.5cm
<table>
<tr><td>Use of 2cm</td><td>Use of 3cm</td><td></td></tr>
<tr><td>2×168
(= 336 cm)</td><td>3×168
(= 504cm)</td><td>M1</td></tr>
<tr><td>336 ÷ 60</td><td>504 ÷ 60</td><td>M1</td></tr>
<tr><td>6 (rolls)
(5.6 not accepted)</td><td></td><td>A0</td></tr>
<tr><td></td><td>8 or 9 (rolls)
(8.4 not accepted)</td><td>A1</td></tr>
</table>
(As 3cm is already rounded up, allow number of rolls rounded down)</td>
</tr>
<tr>
<td>9(b)(i) Alternative method:
60 ÷ 2.5 (= 24 badges per roll of tape)
(Number of rolls of sticky tape is)
168 ÷ (60 ÷ 2.5) or 168 ÷ 24
7 (rolls needed)</td>
<td>M1
M1

A1</td>
<td>FT ‘their 168’ from (a)(ii)
FT ‘their 168’ from (a)(ii)

Only FT if number of rolls is >1
Must be rounded up to a whole number of rolls

Allow 2.5cm rounded to 2cm or 3cm, FT as with use of 2.5cm
<table>
<tr><td>Use of 2cm</td><td>Use of 3cm</td><td></td></tr>
<tr><td>60 ÷ 2
(= 30)</td><td>60 ÷ 3
(= 20)</td><td>M1</td></tr>
<tr><td>168 ÷ 30</td><td>168 ÷ 20</td><td>M1</td></tr>
<tr><td>6 (rolls)
(5.6 rolls)</td><td></td><td>A0</td></tr>
<tr><td></td><td>8 or 9 (rolls)
(8.4 not accepted)</td><td>A1</td></tr>
</table>
(As 3cm is already rounded up, allow number of rolls rounded down)</td>
</tr>
<tr>
<td>9(b)(ii) Takings (50(p) × 168=)
(£)84 or
8400(p)

Costs 4×(£) 2.50 + 7×(£)1.10
+ 7 × 52(p)

(=£10 + £7.70 + £3.64 =)
(£) 21.34

Profit (£84 – £21.34 =)
(£) 62.66</td>
<td>B1

M1
M1

A1

B1</td>
<td>FT ‘their 168’ from (a)(ii)

FT from (b)(i) ‘their number of rolls’ × 52p provided >1

If units are given they must be correct
FT £17.70 + 52p × ‘their number of rolls’, for any number of rolls

FT ‘their 84’ provided 50(p) × ‘their 168’ attempted and ‘their (£)21.34’ provided at least M1 previously awarded</td>
</tr>
</table>