GCSE MARKING SCHEME

AUTUMN 2018

GCSE
MATHEMATICS – NUMERACY
UNIT 2 - FOUNDATION TIER
3310U20-1

INTRODUCTION

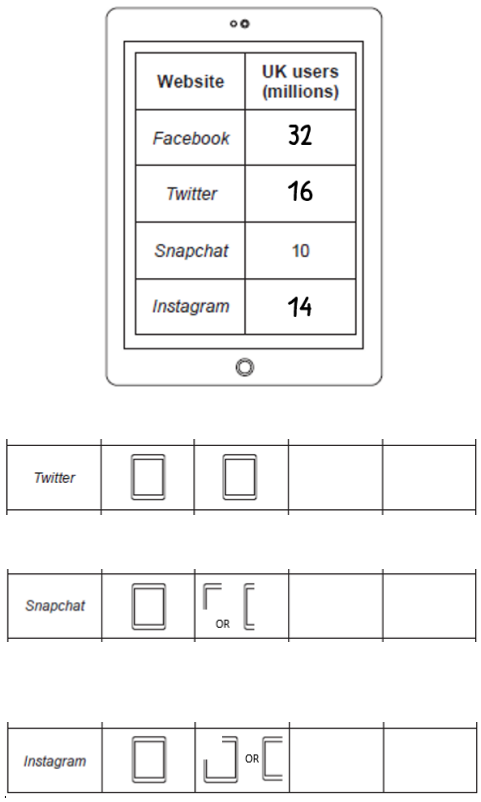
This marking scheme was used by WJEC for the 2018 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' 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 (3310U20-1)

AUTUMN 2018 MARK SCHEME

GCSE Mathematics – Numeracy Unit 2: Foundation Tier	**Mark**	**Comment**
1.(a) 44 (years old)	B1	*Note: this paper was sat in November 2018*
1.(b) nine hundred (and) thirty-one thousand, five hundred and eleven.	B1	
1.(c) 600 seconds	B1	
1.(d) 308 (days)	B1	
1.(e) 13 (rows)	B2	B1 for 14 (rows) or 13.6(9…)(rows) or 13.7(rows) or 13 (rows) remainder 51 OR sight of 1000 ÷ 73 or equivalent Allow sight of 73 × 13 = 949 OR 73 × 14 = 1022 for B1
2.(a) 6 million	B1	
2.(b) ✓  	B1 B1 B1 B1 B1 B1	Answers in table and pictogram take precedence. F.T 'their 32' ÷ 2 If millions written in full (e.g. 32 000 000) penalise first time only. 2 symbols drawn F.T 'their 16' 1¼ symbols drawn Allow intention of ¼ symbol drawn (if a strip is drawn must be less than half a symbol) 1¾ symbols drawn F.T 'their 14' drawn provided not a multiple of 8 Allow intention of ¾ symbol drawn (if a strip is drawn must be greater than half and less than a whole)

2. (c) **No stated** or implied and valid explanation e.g. “Half of 65640000 is 32820000 which is more than 32000000” “Double 32 million is 64 million which is less than 65 (or 66) million” “32 million is less than half the population”	E1	F.T 'their 32 million' from (b) with correct conclusion Do not accept No and “because 32 million used facebook” No and “65 640 000 ÷ 2 = 32 820 000” No and “ 32 + 32 = 64”
2. (d)(i) 15 × 60 OR 870 ÷ 60 900 (mins) 14.5 (hours) **and** False **and** False	M1 A1	 ISW Accept 14(….) hours False needs to be stated or clearly implied Do not accept “there’s not 870 minutes in 15 hours”
(d)(ii) Sight of 75 × 7 **and** True OR 525 ÷ 7 **and** True OR 525 ÷ 75 **and** True	B2	B1 for sight of 75 × 7 OR 525 ÷ 7 OR 525 ÷ 75 Do not accept “Alfie spends 525 minutes”

3. ✓ (Length of fence =) 5·4(m) + 9(m) + 5·4(m) = 19·8(m) (Total number of panels =) 19·8 ÷ 1·8 11 (Cost =) 11× (£)18.69 (£)205.59 (£)206(.00)	 M1 A1 M1 A1 M1 A1 B1	 Must be total of 3 sides for M1 F.T 'their 19·8' ÷ 1·8 Answer must be rounded up if necessary F.T 'their derived 11'× (£)18.69 F.T 'their derived (£)205.59'
3. Alternative method *(Finding number of panels on 1 side =)* *5·4(m) ÷ 1·8(m) OR 9 ÷ 1·8(m)* *3(panels) AND 5 (panels)* *(Finding the cost of the panels =)* *(2 ×) 3 × (£)18.69 OR 5 × (£)18.69* *(£)112.14 AND (£)93.45* *(Total cost =) (£)112.14 + (£)93.45* *(£)205.59* *(£)206(.00)*	 *M1* *A1* *M1* *A1* *M1* *A1* *B1*	 *F.T 'their derived 3' or 'their derived 5' but must be whole number* *Not for £56.07* *F.T 'their (£)112.14' + 'their (£)93.45'* *M1 for 11 × (£)18.69 or* *('their 5' + 'their 6') × (£)18.69* *CAO* *F.T 'their derived (£)205.59'* *If last two M1s not awarded, allow SC2 for sight of 11(panels)*
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.

<table>
<tr><td>4. (a) 5·5 lb</td><td>B1</td><td></td></tr>
<tr><td>4. (b) 20 × 4 + 20
100 (minutes)</td><td>M1
A1</td><td>
ISW
Allow 1 hour 40 (minutes)</td></tr>
<tr><td>4. (c) (3 kg =) 6.6 (lb)

Correct substitution into correct formula (e.g. 30 × 6·6 + 30)

Correct answer (e.g. 228 (minutes))</td><td>B1

M1

A1</td><td>Answer may be seen on graph
Allow answer between 6.5(lb) and 6.7(lb)

May be implied in later working
F.T 'their 6·6'.
Do not accept 30 × 3 + 30 for M1

<table><tr><td>6.5</td><td>30 × 6·5 + 30 = 225 (minutes)
195 + 30 3 hours 45 (mins)</td></tr><tr><td>6.6</td><td>30 × 6·6 + 30 = 228 (minutes)
198 + 30 3 hours 48 (mins)</td></tr><tr><td>6.7</td><td>30 × 6·7 + 30 = 231 (minutes)
201 + 30 3 hours 51 (mins)</td></tr></table>ISW
Allow answers in hours and minutes</td></tr>
<tr><td>5(a)(i) 46 × 0.78 or 46 - 46 × 0.22
(£)35.88</td><td>M1
A1</td><td>Or equivalent (46 - 10.12)</td></tr>
<tr><td>5(a)(ii) $\frac{5}{8}$×43.6(0) or 43.6(0) – $\frac{3}{8}$×43.6(0)

(£)27.25</td><td>M1

A1</td><td>Or equivalent (43.6(0) – 16.35)
Accept use of 0.375 or 0.625
Allow use of 0.38 or 0.62 for M1 only

If no marks in (i) and (ii), award SC1 in (ii) for answers of (£)10.12 and (£)16.35 respectively</td></tr>
<tr><td>5(b) $\frac{6}{43}$</td><td>B1</td><td></td></tr>
</table>

6. Red paint 500ml 1 tin	B1	Allow Red paint 250ml with 2 tins
(250 ÷ 5) × 200 or 50 × 200 or 40 × 250 or 20 × 500 or equivalent calculation that could lead to 10 000 OR sight of 40 : 2 : 1 or equivalent (not 200 : 10 : 5 alone)	M1	FT 20 × 'their quantity of red paint' from the table
10 000 ml white paint	A1	OR 10 litres
White paint 1 litre 10 tins	A2	CAO A1 for any one of • 20 tins 500 ml white • 40 tins 250 ml white • 10 (tins) recorded in the table for white without '1 litre' or with 10 000ml, 10 litres • 20 × 'their quantity of red paint' correctly evaluated with correct decisions regarding possible number and size of tins (need not be least number of tins) • provided M1 awarded for 'their 10000 ml' used correctly to find minimum number of appropriate size tin, including if necessary any rounding up
12 tins of paint altogether	B1	CAO must from sum of 1 + 1 + 10 with evidence of 10 000 ml white paint Award SC marks as detailed: Total amount of paint, use of 250ml tins: Red **500 ml** — **2** White **10 litres** or **10000 ml** — **40** Total number of tins — **43** Overall marks are B0, M1, A1 and **SC2** Total amount of paint, use of 500ml tins: Red **500 ml** — **1** White **10 litres** or **10000 ml** — **20** Total number of tins — **22** Overall marks are B1, M1, A1 and **SC1**

7. (Tablets £) (55 + 48) × 220(= £ 22660) (Covers £) (48 + 14) × 18 (= £1116) (£) 23 776	M1 M1 A1	Allow with missing brackets Allow with missing brackets CAO
7. Alternative method: *55×220 + 48×(220 + 18) + 14×18* *(= 12 100 + 11424 + 252)* *OR* *55×220 + 48×220 + 48×18 + 14×18* *(= 12 100 + 10560 + 864 + 252)* *(£) 23 776*	*M2* *A1*	Allow with missing brackets *M1 for:* *Sight of any 1 of the following:* • *55×220 + 14×18* • *48×(220 + 18)* • *12 100, 10560, 864 and 252* • *12100, 11424 and 252* *CAO*
8(a) Profit: sight of 5% or 18/360 or 1/20 or 0.05 Any of the following methods, or equivalent • 0.05 × 9100 (million) • 0.05 × 9 100 000 000 • 9100 (million) – 0.95 × 9100 • 9100 000 000 – 0.95 × 9100 000 000 (£) 455 (million)	B1 M1 A1	Allow for sight of 16/360 to 20/360 Award of M1 implies previous B1 FT 'their 100-50-25-10-5-5' or use of 16/360 to 20/360 Allow embedded '5%' within a repeated subtraction from 9100 million Allow place value error from misinterpretation of million, i.e. 0.05 × 9100(0....) Do not allow for 5% **of** 9100 (million) or equivalent seen without convincing working or an answer implying '×' has been used CAO mark final answer, this being the answer line if completed Allow for (£) 455 000 000 (including in the answer space)
8(b) 370 000	B1	

8(c) Any one of: • $\frac{(900 - 828)}{900}$ (× 100 = 8%) • 0.08 × 900 (=72) • 0.92 × 900 (= 828) • 100 × 828 ÷ (100 - 8) (= 900) • 828 ÷ 900 (×100) (= 0.92 (92%))	M1	
Indicates or implies 'Yes' AND as appropriate: • $(\frac{(900 - 828)}{900} \times 100 =)$ 8% • (900 – 72 =) 828 OR (828 + 72 =) 900 • (0.92 × 900 =) 828 • (100 × 828 ÷ (100 - 8) =) 900 • (100% - 92% =) 8%	A1	A correct evaluation of an appropriate calculation implies 'Yes' irrespective of the box ticked Match 'A' mark to corresponding 'M' mark, i.e. 1st bullet points match, 2nd bullet points match, etc.
8(d) (Electricity cost is) 828 ×(£)0.18 (£)149.04 or 14904(p)	M1 A1	Accept 828 × 18(p) If units are given they must be correct Accept £149.04p
(Cost of electricity and standing charge is £149.04 + 65 =) (£) 214.04	B1	FT provided 828 used in a calculation for 'their cost of electricity'
(Total bill includ VAT at 5% (£10.70(2)) 1.05 × 214.04 or equivalent (£)224.74(2)	M1 A1	FT from 'their total of electricity and standing charge' Allow (£)224.75
9(a) Sight of ($) 12000	B1	Ignore £ for $
(Tax at 20%) 0.20× 12000 (=$ 2400)	B1	
9(b) (Tax at 25%) 0.25 × 3000 or 0.25 × (25000 – 22000) or equivalent	M2	Ignore £ for $ M1 for 25000 – 22000(= $3000)
($) 750	A1	CAO, not FT
Total tax due ($) 3150	B1	Allow for the correct sum of 2 amounts of tax derived from use of 20% and 25% rates
Refund due (4000 – 3150 =) ($) 850	B1	FT 4000 – 'their derived 3150' provided 'their derived 3150' < 4000 and 'their derived 3150' ≠ 2400
9(b) Alternative method: *Sight of* 25000 – 22000 *(=$3000)*	*B1*	
25000 - *(0.80 × 12000 + 0.75 × 3000 + 10000)*	*M2*	*M1 for sight of* *0.80 × 12000 + 0.75 × 3000 + 10000*
Tax due ($) 3150 *Refund due ($) 850*	*A1* *B1*	*FT 4000 – 'their derived 3150' provided 'their derived 3150' < 4000 and 'their derived 3150' ≠ 2400*