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.

GCSE Mathematics – Numeracy Unit 1: Intermediate Tier Summer 2018	Mark	Comment
1(a) 57·5 (miles)	B1	
1(b) Method, e.g. 4 × 230, 8 × 115, or equivalent 920 (miles)	M1 A1	FT 16 × 'their 57·5' Useful FT information: <table><tr><td>FT</td><td>Miles</td></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>
2(a) 2 × 5.60 + 2 × 2.30 (£) 15.80 (£) 4.20	M1 A1 A1	FT 20 – 'their 15.80' correctly evaluated provided M1 awarded *Alternative:* *20 - 2 × 5.60 - 2 × 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 • (£)1.9(0) from including charge for Anton (under 3), or • (£)2.14 from incorrect column used

2(b) (Adult extra 10% of £5.60 is £) (0.)56	B1	Ignore units. (£)1(.)12 implies 56(p)
(Adult with extra 10% is £) 6.16 OR (Adult pays too much by) 6.4(0) – 5.6(0) – (0).56	B1	(£)12.32 implies (£)6.16 FT 'their 56p' provided 10% of £5.60 attempted
(Adult pays too much by) 24p or £0.24	B1	CAO. B0 for 48(p) If units are given they must be correct Penalise units not given in (OC)W
Organisation and communication	OC1	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
Writing	W1	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.
2(c) Intention to calculate 714 000 ×2 ÷ 7	M1	May be seen in stages Sight of 2/7 × 714 000 is insufficient for M1, there must be an intention to ÷7 and ×2, e.g. allow from sight of incorrect responses 24000, or 2 × 12000
204 000 (m^2)	A1	Mark final answer

3(a) Suitable reason, e.g. 'the range is not an average', 'range doesn't take all the goals into consideration', 'doesn't tell you about the number of goals scored', 'because the range is **only** the difference between the highest and the lowest'	E1	Ignore additional comments made, irrespective of being reasonable or not Do not accept, e.g. 'Different number of games played', 'Wales played more games in 1984', 'average is not relevant', 'Wales scored a different number of goals in the 2 years', 'Wales scored more goals in 1985', 'Wales might have had a different team in 1985', 'because the range is the difference between the highest and the lowest', 'to find the average you find the mean'
3(b)(i) Method to find the mean, e.g. $5 \div 8$ or $8 \div 6$ Both years correct: 1984 5/8 (goals), 1985 8/6 (goals) **AND** suitable conclusion e.g. 'yes', 'true', '1985 is better than 1984'	M1 A2	Accept for 1 year shown, or 1 correct year Accept equivalent correct interpretation showing understanding of comparison of the means without showing the fractions Accept 1 remainder 2 for 8/6 Do not ignore further inverse working, e.g. $8 \div 5$ rather than $5 \div 8$ A1 for 1 of their 2 means correct, do not ignore further inverse working Left as operations, i.e. 5÷8 and 8÷6, if no further interpretation, A0 However if further interpretation, e.g. being <1 and >1, or equivalent then award A1 *Note:* *1984: (1+1+1+0+0+0+0+2) ÷ 8* * (= 5/8 = 0.625 goals)* *1985: (1+1+3+2+1+0) ÷ 6* * (= 8/6 = 1.33… goals)* *Accept rounding or truncation*

3(b)(ii) Reason, e.g.
 'other teams might have been stronger',
 'don't know about injuries',
 'home and away goals not considered',
 'doesn't consider winning and losing',
 'Wales haven't played against the same teams in the 2 years',
 'they played different teams',
 'there were different players',
 'doesn't consider goals against'
	E1	Allow, e.g. 'different number of matches'
		
		 Do not accept, e.g.
		 'only looked at mean'
		
		 Allow statement of different
		   • *players*
		   • *number of goals*
		   • *teams*
		   • *number of matches*

3

4(a)(i) 10:13	B1	
4(a)(ii) 09:36	B1	
4(b) (Leaves Grainsey at) 13(:)00 or 1p.m. Bus 6 / Bus 7 table below	B4	Allow 13:00 p.m. or 1:00 or 1 o'clock B3 for attempt to add 3 hours onto 10:00 (Do not accept 10:00 + 180) OR Listing 9 **further** times for bus 6 and 4 **further** times for bus 7 with at most one error in total (FT with that 1 error to check further times) B2 for sight of result (LCM 2 × 2 × 3× 3 × 5 =) 180 (minutes) or 3 hours OR Listing 7 **further** times for bus 6 and 3 **further** times for bus 7 with at most one error in total (FT with that 1 error to check further times) OR Listing 5 **further** times for bus 6 and 2 **further** times for bus 7 with no errors. B1 for sight of 20 = 2×2×5 with 45 = 9×5 OR for sight of 20 = 4×5 with 45 = 3×3×5 OR for sight of 20 = 4×5 with 45 = 9×5 OR Listing 3 **further** times for bus 6 and 2 **further** 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, ...

4(b) table:

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) • 16 (years) 0 (months) 　　　with 13 (years) 5 (months), or • 13 (years) 6 (months) 　　　with 16 (years) 0 (months), or • 16 (years) 0 (months) with 13½ (years) 0 or 6 (months) B1 for • either answer correct in appropriate statement 　accept 16 (years) 'blank' (months), or • 13 (years) 5 (months) followed by 16 (years) 0 (months), or • 13½ (years) 0, 6 (months) followed by 16 (years) 0 (months)	
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		

5

7. 1cm : 50 000cm means 1cm is 500 m or 0.5(0) km OR Sight of (48 × 50 000 =) 2 400 000	B1	Units given must be correct or measures clearly used correctly <u>FT incorrect map scale conversion with place value error B0, with FT for possible B1, M1, A0, E1, except no FT with use of 50 000</u>
(48cm route is 0.5×48 =) 24 (km), OR 1cm is 5/16 mile	B1	If map scale conversion is correct then this B1 implies the previous B1 If units are given they must be correct

Route is 5 × 24 ÷ 8 or 48 × 5 ÷ 16
        or 24 ÷ 1.6
                    (=) 15 miles
	M1
	
	A1
		FT 'their 24' or 'their 48 × 0.5'
		
		CAO. Units must be given or implied correctly by comparison with 13 (miles).
		
		Alternative M and A marks
		13 × 8 ÷ 5 *M1*
		          (=) 20.8 km *A1*

Reasonable conclusion, e.g. 'Yes, Macy could push herself to cycle a bit further', 'No, Macy only wants to cycle 13 miles', 'Don't know, could depend on the hills', "no, it is 2 miles longer than Macy can ride'	E1	Depends on at least 2 marks previously awarded including M1 and FT reasonable for 'their number of miles/km'

8(a) (Total area =) 15×15 + 4×5 or 20×4 + 11×15 or 20 × 15 - 11 × 5 or equivalent	M1		*Note: check diagram for the area* Accept any correct area calculation
(Volume = total area) × 0.2	M1		Allow for 'their total area' × 0.2 where 'their area' includes a product, or for one rectangular (or square) area × 0.2

(Volume =) 49 (m³)	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)
			
			A1 for calculations with evaluated terms as shown (in bold and underlined)
			
			FT from M1, M0
			(area 225+ 20 or 80 + 165 or 300 - 55)
			245(m²),
			
			OR
			
			FT from M1, M1:
			for one area product correctly evaluated within 'their area'
			AND ×0.2 correctly evaluated
			
			45 + 4×5× 0.2 (m³), or
			          15×15×0.2 + **4**(m³), or
			16 + 11×15×0.2 (m³), or
			          20×4×0.2 + **33**(m³), or
			60 – 11 × 5 × 0.2 (m³), or
			          20 × 15 ×0.2 – **11** (m³)
			
			Accept implied correctly evaluated area product, e.g. 4×5 + 15×15 = 20 + *125*
			                                              = 145
			With 145 × 0.2 = 29 (m³), award M1, M1, A1 (although 125 is incorrect)

8(b) 2/3 × 6   OR   2/3 × 45
          × 45   × 6
          or equivalent
	M1
	m1
			Allow sight of 2/3 of 6 or 2/3 of 45
			(= 4 × 45 or 30 × 6 or 2/3 × 270)
			(= 180)

+ 35	m1		Intention to add 35 Depends on M1 only
(£) 215	A1		CAO

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9. 49 × 20
 	
            (= £) 980
% Interest   <u>980 - 400</u> (×100)
                       400
or   <u>980</u> (×100) - 1(×100)
         400
 	
                                   145 (%)
	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°	B1	
10(b) 332°	B1	
10(c)(i) 8400 ÷ 200 42 (population/km^2)	M1 A1	Or equivalent CAO
10(c)(ii) 5 × 8400 ÷ (3 + 4 + 5) 3500 (people)	M1 A1	Full method required Accept embedded answer, provided clearly Gwyndir

11(a) 0.02 × 3000 + 3000   (= £3060)
or equivalent
 	
    0.02 × 3060 + 3060
 	
                            (£)3121.2(0)
	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
		
		Alternative:
		Sight of 1.02^2 × 3000 M1
		1.0404 × 3000 M1
		* FT 'their 1.0404' incorrectly evaluated*
		(£)3121.2(0) A1 CAO
		
		If no marks, award SC1 for (£)2881.2(0) (from depreciation)

11(b) 72 ÷ 0.8 or 100 × 72 ÷ 80 (£) 90	M1 A1	Accept an unsupported answer of (£)90 Allow M1, A1 for (£)90 found from trial & improvement

8

12. (Maximum cup height)12.5 (cm)
    AND (Maximum gap) 4.5 (cm)
OR
For **use** of 12.43 to 12.499...
    AND 4.43 to 4.499...
	B1	For sight of 12.5 and 4.5 (ignoring any least measures given)

(Maximum height of 7 coffee mugs is) 12.5 + 6 × 4.5	M2	FT 'their 12.5' and 'their 4.5' provided in ranges >12 to 12.5 and >4 to 4.5 respectively Award M1 **only** (A0) for 12.5 + 7× 4.5 (A0)
(=) 39.5 (cm)	A1	
Conclusion or reason, e.g. '(as 39.5 cm > 39 cm) Michelle cannot be certain the mugs will fit'	E1	Depends on at least 2 marks previously awarded FT 'their 39.5' irrespective if <39 or >39 **An unsupported 39.5 is no marks as no working shown**
13(a) 20 to 25 minutes	B1	
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'	E1	Do not accept any reason implying 'Yes' Allow 'No' with, e.g. 'the graph shows the cumulative frequency not the actual times', 'doesn't show the actual times' 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'
13(c) **70%** (within 30 minutes)' (80% within) **35** (minutes)'	B1 B1	

13(d) Difference 26 -   24.5 to 24.8
Answer in the range
  • 1.2 to 1.5 (minutes), or
  • 1 minute 12 seconds to
     1 minute 30 seconds
	M1
	A1
		Do not accept an answer in the correct range from incorrect working
		Mark final answer
		If units are given they must be correct

14(a) 25% of 3000 or 0.25 × 3000
 	
                             or equivalent
 	
                                    750 (people)
	M1
	
	A1
		
		If no marks, award SC1 for an answer of 2250 (people)

14(b) Idea to consider fraction or decimal part between the median & UQ
       ⅔ × 0.25 × 3000 or equivalent
                                   500 (people)
	M1
	
	m1
	A1
		For example, sight of 10/15 (= ⅔) or 5/15 (= ⅓)
		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 ¾ 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'