GCSE MARKING SCHEME

AUTUMN 2016

MATHEMATICS - NUMERACY (NEW)
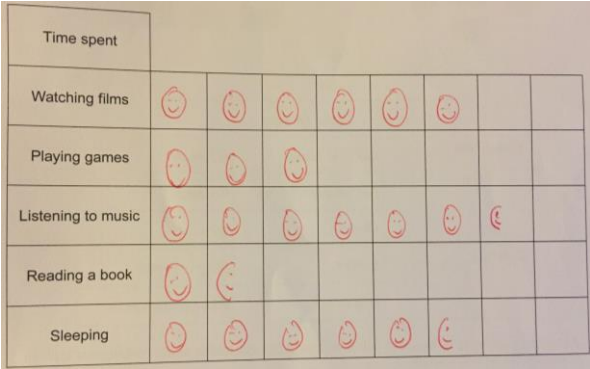**UNIT 1 - FOUNDATION TIER**

3310U10-1

INTRODUCTION

This marking scheme was used by WJEC for the 2016 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: Foundation Tier Autumn 2016	Mark	Comment
1(a) (4, 3)	B1	
1(b) Points plotted at (-1, 2) and (1, 0)	B2	Accept any unambiguous indication of the points. Award B1 for either plotted correctly. Award SC1 if only the correct points are plotted but are incorrectly labelled.
1(c) (i) m^2	B1	
1(c) (ii) 4.5 × 3 13.5 (m^2)	M1 A1	If (i) not attempted but answer in (ii) has m^2 then award B1 for (i).

1(d) (Number of layers =) 154 ÷ 7
               22
 	
(Number of bricks =) 22 × 8
 	
          176
	M1
	A1
	
	M1
	
	A1
		Award M1 A1 for 7 ÷ 154 = 22.
		Award M0A0 for 7 ÷ 154 = 21 (i.e. for a slip in working)
		FT 'their 22'
		Do not FT for 154 × 8 or 7 × 8
		
		154 ÷ 7 × 8 = 176 award M1A1M1A1
		154 ÷ 7 × 8 only, gets M1A0M1A0

2. 450 – (120 + 60 + 130 + 30) 110 passengers slept seen or implied in diagram Correct pictogram drawn 	M1 A1 B3	FT 'their 110' provided it is seen. B2 for 3 or more independent rows drawn correctly B1 for 2 independent rows drawn correctly Completely correct pictogram with no workings for 110 shown gets M1A1B3 Penalise -1 only for consistent use of a different symbol.

GCSE Mathematics – Numeracy Unit 1: Foundation Tier Autumn 2016	Mark	Comment
3. (Total number of people =) 3 × 6 + 2 × 10	M1	
38 seen or implied	A1	38 may be embedded in other working eg in 38 × 9
(Cost of tables = 3 × 3 + 2 × 4=) (£)17	B1	Seen or implied by (£)9 + (£)8 in final addition
(Cost of chairs = 38 × 2=) (£)76	B1	FT 'their derived 38'
(Cost of buffet meal 38 × 9=) (£)342	B1	FT 'their derived 38'
(Total cost) (£)435	B1	FT 'their 17' + 'their 76' + 'their 342'
		Alternative method *(Total number of people =) 3 × 6 + 2 × 10* *M1* *38* *A1* *(Cost of tables = 3 × 3 + 2 × 4=) (£)17* *B1* *(Cost of chairs and buffet =) 38 × (2 + 9)* *M1* *(£)418* *A1* *(Total cost) (£)435* *B1*
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
Accuracy of 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.
4(a) 30 + 30 + 15 + 15 + 15 + 15	M1	
120 (metres)	A1	Ignore incorrect units Award SC1 for an answer of 90(m) from a method of 15 × 2 + 30 × 2 OR award SC1 for an answer of 105(m) from a method of 15 × 3 + 30 × 2
4(b) Answer in the range 8.6(m) to 9.4(m) inclusive	B2	Award B1 for *AB* 4.5(cm) ±2mm OR award B1 for 2 × 'their *AB*' where *AB* is not in the range 4.3 to 4.7 inclusive. OR award B1 for an answer of 8(m) or 10(m)
4(c) Total goals scored 4 × 7	M1	Accept an embedded answer of 8.
28	A1	
28 – (9 + 6 + 5)	M1	
8	A1	
4(d) 16:07	B1	
5(a) 14 520 (square yards)	B1	
5(b) Method, e.g. using readings for 2.5 and 3 acres or 5.5 × reading for 1 acre	M1	e.g. sight of 12100 + 14520, or 5.5 × 4840, 12100 + 12100 + 2420, or 9680 + 9680 + 4840 + 2420 in working: i.e. sight of any calculation that could lead to a correct answer FT e.g. 12100 + 'their 14520'
26 620 (square yards)	A1	FT 'their 14520' used correctly

GCSE Mathematics – Numeracy Unit 1: Foundation Tier Autumn 2016	Mark	Comment
6(a) Method of comparison, e.g. per 100 ml or for 6000 ml, or divide the cost of 300 ml by 3 and multiply by 4 or 5, or similar	M1	Needs to show attempt to compare at least 2 of the 3
Correctly evaluated comparison for 2 of the 3 sizes	A1	Ignore incorrect units |	per 100 ml	per 6000 ml
300 ml	22 p	£13.20
400 ml	23 p	£13.80
500 ml	25 p	£15	
Correctly evaluated comparison for all sizes, may be different methods for different stages, AND conclusion '300 ml (small) bottle is best value for money'	A1	Consistent units that are not obviously incorrect are required, or allow no units given Comparison of small with large then medium with large is not a full comparison of all 3 Examples: Comparing small and medium at 1200 ml and then small and large at 1500 ml, possible M1, A1, A1 **Insufficient,** 100 ml is 22p, so 500 ml is £1.10 (ignoring medium size bottle) so the small one is cheaper, possible M1 A1 A0, or sight of 2 small bottles is only 7p more than the big bottle for an extra 100 ml is likely to be M0 A0 A0
6(b) 2 (medium) bottles of 400 ml for (£)1.84 or 184(p)	B1	Penalise incorrect units -1 only once Allow £1.84p
300ml (small) bottle and 500ml (large) bottle for (£)1.91 or 191(p)	B1	Allow £1.91p
Two 400ml (medium) bottles **AND** states 'cheaper'	B1	Depends on at least B1 previously awarded and both of these options have been considered Example: Costs per 100ml (22p, 23p & 25p) are used leading to comparison of 800ml as 176p, **184p** and 200p or equivalent, with smallest selected as the best option, is B1, B0, B0
7(a) A statement regarding e.g. Q1: 'not relevant', 'confidentiality', 'too personal', 'inappropriate question', 'it isn't about where you live'	B1	For any one equivalent statement. Ignore additional comments. Do not accept 'no option boxes given', 'too open ended', 'no space to answer'
Q2: 'times not exclusive', 'no period of time given', '10 times in 2 boxes', 'doesn't say if it is in a week', 'it is vague (as it doesn't say in a month)'	B1	For any **one** of these, or equivalent statement. Ignore additional comments. SC1 if <u>both</u> correct but in reverse order.

GCSE Mathematics – Numeracy Unit 1: Foundation Tier Autumn 2016	Mark	Comment
7(b) A criticism regarding • location ((biased on DVD shelves) in the supermarket) • poor distribution method • does not target teenagers	B1	For any **one** of these, or equivalent statement. Ignore additional comments. Accept 'may not be seen on the shelves', 'better if left at the checkout', 'wasn't asked verbally', 'should have been handed out', 'no guarantee anyone would answer them' Do not accept 'some teenagers don't watch DVDs', 'teenagers watch online'
8(a) 034° ± 2°	B1	Do not accept 34° ± 2° Allow N34°E ± 2°
8(b) Llangurig	B2	B1 For an answer of Llanidloes
8(c)(i) An answer in the range 8 to 11 miles inclusive	B1	
8(c)(ii) 5 × 40 ÷ 8	M1	Accept evidence of 40 ÷ 1.6 For this question accept use of 3 miles is approximately 5km, with an equivalent calculation 3 × 8
25 miles	A1	For this question FT from 3 miles is approximately 5km to give an answer of 24(miles) Accept unsupported answers of 24(km) and 25(km)
Aberystwyth	A1	Unsupported answer of Aberyswyth is M0, A0, A0 It is possible to award the final A1 from M1, A0, but not from M0

GCSE Mathematics – Numeracy Unit 1: Foundation Tier Autumn 2016	Mark	Comment
9(a)(i) 44%	B1	
9(a)(ii) 31%	B1	
9(b)(i) Conclusion (stated or implied) and reason, e.g. 'Yes, (as marks of 2 girls and boys are the same, but) marks for 3 boys are better than the marks of the other 3 girls', 'No, as there is insufficient data'	E1	The conclusion (e.g. yes/no/can't) MUST match the reason given Accept 'no, as she has plotted one score incorrectly' or similar, i.e. accept 'no' if followed by a reasonable explanation Accept 'yes as some boys had higher marks in English', 'Girls marks 10, 20, 33, 50, 70 and boys marks 10, 20, 35, 60, 75 so yes boys do better', 'yes as boys scored (17) more overall than girls', 'yes as the first 2 are the same, but the last ones are higher', 'yes, some boys did better than girls', 'yes, because there are more higher plots towards the end of the graph' Do not accept 'no because 3 out of 5 boys scored a better mark than the girls', 'yes, the boys had higher plots', 'the boys had the highest mark', 'no, as boys marks are close to the girls marks', 'yes, boys had higher marks', 'yes because boys do better in English', 'yes because the highest mark for girls is 70 and boys is 75', 'yes because boys had over 70 marks and girls highest mark was 70', 'no, both diagrams are similar', 'no, both have positive correlation', 'yes, boys have a greater range'
9(b)(ii) States or implies 'get more results', 'collect more data', 'repeat the test'	E1	Do not accept 'put the results on one graph', 'compare the mean scores'
9(c) Straight line of best fit for boys, appropriate for trends, with points above and below the lines	B1	Do not accept a line of best fit through (0, 0)
Approximately 55 marks	B1	Accept an answer in the range 53 to 57 marks inclusive FT for 'their line of best fit' including a 'curve' (not dot to dot)

GCSE Mathematics – Numeracy Unit 1: Foundation Tier Autumn 2016	Mark	Comment

10.
 	
(Money in bank account)   100 × 4 + 820
 	
(Money spent)   4 × £250 + 400 × 50p
           or 400 × (£)3 or equivalent
 	
(Bank balance) (£)20
	M1
	
	M2
	
	A1
		Calculations may be embedded in stages of working
		(= £1220)
		
		(=£1200)
		Place value must be consistent or correct units stated (may be implied in later working), i.e. could lead to £1200
		
		M1 for sight of 4 × (£)250 and 400 × 50(p) or equivalent
		OR
		M1 for either … × (£)250 + 400 × 50(p) or
		           4 × (£)250 + … × 50(p) or equivalent
		
		CAO. Do not accept an unsupported answer of (£)20

11. (Time difference) 5 hours 13:00 + 10 hours 30 minutes - 5 hours Thursday 18(:)30 or Thursday 6(:)30 p.m.	B1 M1 A2	 FT 'their 5 hours' Allow 'Thursday 18(:)30 p.m.' A1 for 18(:)30 or 6(:)30 p.m. or 'Thursday 6(:)30' *Award B1 and SC1 for an answer of 'Friday 04:30' or 'Friday (0)4(:)30 a.m.'* *Also FT for SC1 for adding 'their 5 hours', i.e. 23:30 + 'their 5 hours' with 'Friday' (unless 'their 5 hours' < 30 minutes*