GCSE MARKING SCHEME

AUTUMN 2017

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

INTRODUCTION

This marking scheme was used by WJEC for the 2017 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 2: Foundation Tier Autumn 2017 FINAL	Mark	Comment
1. (a) (Cost of holiday before extras or discount) 860 ×2 + 500 (=£2220)	M1	The first three method marks may be awarded in any order and may be implied by sub totals or final total before discount.
(Cost of Full Board) 80 ×2 + 55 (=£215)	M1	If M0 M0 awarded, for second M1 allow: (cost for the 2 adults =) (860 + 80) ×2 (=£1880) OR (cost for 1 adult and 1 child =) 860 + 500 + 80 + 55 (= £1495)
(Total cost with upgrades) (2220 + 215) + 115	M1	Allow addition of 2 or 3 lots of 115 for M1 If calculations not shown, FT 'their 2220' + 'their 215' along with 115 or 2 or 3 multiples of 115, provided at least M1 previously awarded. Do not penalise twice for the omission of a cost.
=(£)2550	A1	CAO. Do not award A1 if (£)2550 is not the total cost on which discount could be applied.
(Total price after discount) 2550 – 2550 ÷ 10 or equivalent	M1	FT 'their 2550'. Award M1 A0 for any correct method of subtracting 10% from any other relevant cost. M0 if discount is not subtracted from 'their (£)2550'.
=(£)2295	A1	
Organisation and communication Accuracy of writing	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
	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.

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1(b) 5 (hours)	B2	B1 for 7 (hours) or sight of 20:00 or 8 p.m. NOT 8 or 8 a.m. or sight of 17:00 or 9 (hours) or 22:00 – 15:00 – 2 hours seen or implied.
1(c) Suitable criticism given. e.g. 'There is no scale'. 'The vertical axis does not state ^oF or ^oC'. 'No labels on the vertical axis'. 'It does not give specific temperatures'.	E1	Allow 'There are no numbers'. Ignore incorrect reference to x and y axis.
1(d)(i) unlikely	B1	
1(d)(ii) November	B1	
1(e) (i) April or Apr	B1	
1(e)(ii) 8(hours)	B2	B1 for sight of 14 and 6. Figures may be seen from the graph OR B1 for the correct answer to 14 – a where a ≤ 7 OR B1 for the correct answer to b – 6 where b ≥ 7.
1(f)(i) (order data) 17, 17, 17, 19, 23, 25, 27, 30, 30, 32, 32, 33 Or identify the **two** middle numbers, 25 and 27. 26(^oC)	M1 A1	Allow omission of one value for M1 CAO Unsupported 26(^oC) gets M1A1
1(f) (ii) Appropriate comment e.g. 'The mode is the lowest temperature'. '17 does not represent the data', 'It is too cold to be the average'. 'It does not use all the data'.	E1	17 alone gets B0 Allow 'all three values are in the winter months'. 'the lowest temperature is 17'
2. (a) 3·2 ×1800 5760 (cm^2)	M1 A1	Mark final answer.
2. (b) 4860 ÷ 1800 2.7 (kg)	M1 A1	Allow embedded answer

2. (c)(area of hutch 150 ×80 =)12 000(cm^2)	B1	Ignore irrelevant calculations
(area needed=) 4860 + 5760 OR (area left for large rabbit =)12000 – 4860 (=7140) OR (area left for small rabbit =)12000 – 5760 (=6240) OR (area left over =)12000 – 4860 – 5760 (=1380)	M1	FT 'their 5760' FT 'their 12 000' where subtraction leads to a positive answer.
10620(cm^2) (so the area is smaller than 12 000cm^2) OR 7140 is greater than 5760 OR 6240 is greater than 4860 OR 1380 (is left over)	A1	FT 'their 12 000' if greater than 10620 *Alternative methods:* *(area of hutch 150 ×80 =)12 000(cm^2) B1* *(3.2 + 2.7) ×1800. FT their '2.7' M1* *10620(cm^2) (smaller than 12 000cm^2) A1* *FT 'their 12 000' if greater than 'their 10620'* *OR* *(area of hutch 150 ×80 =)12 000(cm^2) B1* *(mass of rabbit allowed =)12000 ÷ 1800 M1* *= 6.6(6….) and comparison with* *3.2 + 'their 2.7' A1*

3. (a)Two correct answers
         16 (ounces butter)
          8 (ounces currants)
	B1	

3. (b) Yes, stated or implied, with an explanation. e.g. 'She has enough because 1kg ≈ 2.2 lb.	E1	Do not award E1 for "yes", without explanation. Allow 'Yes, because 1 kilogram is more than 2 pounds'.

3. (c) (Income from sales of Welsh cakes)
         40 × (0.)25 × 12
         (£)120(.00) or 12000(p)
 	
(Cost of making Welsh cakes)
(4(.)50 ×12 =) (£)54 or 5400(p)
 	
(Profit=)   (£)66
	M1
	A1
	
	B1
	
	B1
		Award M1 A1 for sight of (£)120 or 12000(p).
		If units given they must be correct
		
		FT 'their 120' – 'their 54' if consistent units applied and profit is positive.
		Answer of 6600(p) implies M1 A1 B1 B0
		
		Alternative:
		(Weekly profit =)
		* 40 × (0.)25 – 4(.)50 M1*
		Units must be consistent
		* =(£)5.5(0) or 550(p) A1*
		
		(Total 12 week Profit=)
		* 5.5(0) ×12 M1*
		FT 'their 5.5(0)'
		
		* (£)66 A1*

4(a) Mass of raspberries 4.5(0) ÷ 3.6(0) or 450 ÷ 360 1.25 (kg)	M1 A1	Place value must consistent Allow sight of 3.60 ÷ 4 = 0.9 with 3.60 + 0.9 = 4.5 for M1 Accept 1250(g), if units are given they must be correct Mark final answer
4 (b) Mass of pears (3 × 1.25 =) 3.75 (kg) or 3750(g) Cost of pears (3.75(0) × 2(.)60 =) (£)9.75 or 975(p) Total cost of raspberries and pears (£4.50 + £9.75 =) £14.25 or 1425(p) Change (£)5.75 or 575(p)	B1 B1 B1 B1	FT 'their 1.25' FT 'their 3.75' provided 3 × 'their 1.25' has been attempted If units are given they must be correct FT correct evaluation of 4.5(0) + 'their 9.75' May be embedded within correct evaluation of their change Allow £5.75p, if units are given must be correct FT provided 4.50 + 'their 9.75' has been attempted *Example of FT from no answer in (a):* *B0, B0 then* *(£4.50 + 3 x £4.50 =) (£)18 B1* *(Change = 20 - 18 =) (£)2 B1*
5(a) 0	B1	
5(b) 96	B1	
5(c) 24	B1	Do not accept as a fraction or percentage of any group of pupils, however accept '24 out of ...'
5(d) French and Spanish Reason, e.g. 'more pupils selected both these', '27 selected French and Spanish', 'Only 22 selected Spanish and Mandarin'	B1 E1	 Depends on B1 *Ignore any incorrect totals, if 27 for French and Spanish stated* *(Note: S&F 27; M&S 22, M&G 11, G&F10, M&F 8)*

6(a) Gives a list of at least 3 year groups, e.g. '7, 8, 9, (10, 11, 12, 13)', 'reception, 1, 2, (3, 4)', OR states, e.g. 'Year Group boxes', 'Year 7 – Year 11', 'Year 7, Year 8 and so on' 'Year 7 to 9, Years 10 and 11'	B1		*In either order* Allow if a least 2 groups are given, with no overlaps or repeats, e.g. 'Key Stage 3, Key Stage 4'
Gives options, e.g. 'yes, no, (don't care)' , 'yes, no', 'yes, no, other' OR states, e.g. 'yes and no boxes'	B1		
6(b)(i) Black	B1		
6(b)(ii) Measures the angle 60° ± 2°	B1		*Check diagram* FT for 60° ± 2° Allow for appropriate sight of 60, e.g. 60/100, 60%, 60 people, but not as a denominator. *Example of inappropriate sight of 60:* *300/5 = 60 or 300 ÷ 5 = 60, B0*
(Fraction) 60/360	M1		FT 60° ± 2° but ≠ 60° for M1 only Allow sight of 300 × 60/360 or 6/36
1/6	A1		CAO Allow B1, M1, A0 for an answer of 50 (people) Award B1, M1, A1 for an answer of 1/6 from sight of 360/60 *Alternative:* *50/300 M2* *1/6 A1* If no marks, award SC1 for FT 'blue' from (a) for an answer of (75/300 =) ¼ in (b)
7(a) 3.2 hours	B1		
7(b) $\dfrac{120}{1\ hr\ 15\ mins\ +\ 2\ hrs\ 15\ mins}$	M1		Allow with incorrect notation for 3 hours 30 minutes, including 120÷ 210, or 120 ÷ (1.15 +2.15), or 120/3.3(0) or sight of answer of 0.57(... mph) or 36.3(63... mph) or 36.4 (mph)
120 ÷ 3.5 or 120 ÷ 210 × 60 $34^2/_7$ (mph) or 34(.2857… mph)	M1 A1		Time notation must be correct

8(a) 0.12 × 3 063 000 or equivalent	M1	12% of 3 063 000 is M0, unless the required calculation (or correct response) is seen *Allow M1 for sight of 0.12 × 3 063 000 with 0.3(0) × 3 063 000 only or sight of 367560 with 918 900 only or equivalent*
367 560 (people)	A1	Mark final answer *If no marks allow SC1 for use of 2014 data with an answer of 371 040*
Assumption, e.g. 'Wales is typical', 'Wales has a similar population to the rest of the world', '12% of people living in **Wales** are left-handed', 'newspaper is correct for Wales'	E1	Independent mark Do not accept, e.g. '367 560 people who lived in Wales were left-handed' Allow, e.g. 'newspaper report is correct',
8(b) (100 ×) 3 063 000 - 1 559 000 _____3 063 000	M2	M1 for sight of 3 063 000 -1 559 000 (= 1 504 000)
49.1 (%)	A1	CAO. Must be to 1 decimal place *Alternative (using number of women):* *1 (×100) - 1 559 000 (×100) M2* *_____3 063 000* *49.1(%) A1* *If no marks, award SC1 for an answer of 50.9(%)* *Allow M2, A0 for an answer of 49(%), unsupported or provided no incorrect working seen*
8(c) 0.3(0) × 3 092 000 or equivalent	M1	(= 927 600) 30% of 3 092 000 is M0, unless the required calculation (or correct response) is seen
928 000 (people)	A1	CAO. Must be to nearest 1000 *If no marks allow SC1 for use of 2011 data with an answer of 919 000 (must be nearest 1000)*

8(d)			*Penalise incorrect place value for millions only once*
Sight of 2 × 8 (%) OR use of 12% **with** left hand men : left hand women is 2 : 1		M1	
16 (%)		A1	
0.16 × 3 (000 000) or 0.48		m1	FT 'their 16%' provided M1 previously awarded

0.48 million or 480 000 or 4.8 × 10^5		A1	A0 for an answer of 0.48
			<u>Mark final answer</u>
			
			Alternatives:
			0.12 × 6 000 000 or
			0.24 × 3 000 000 *M1*
			        = 720 000 *A1*
			
			$^2/_3$ *× 720 000 or*
			720 000 - 0.08 × 3 000 000 *m1*
			(FT 'their 720 000 provided M1 previously awarded)
			        = 480 000 *A1*
			
			OR
			Use *of population is 50% male* *M1*
			(stated or implied, but not if further incorrect working)
			0.08 × 6 000 000 *m1*
			        = 480 000 *A2*
			(If stated as 480 000 women, then no marks, as no engagement with the question)
			
			OR
			0.08 × 3 000 000 *M1*
			    = 240 000 (left women) *A1*
			(May be implied later, but needs to be clear working with left handed women if no further working)
			             × 2 *m1*
			        = 480 000 *A1*