wjec cbac

GCSE MARKING SCHEME

AUTUMN 2019

GCSE MATHEMATICS – NUMERACY UNIT 1 - INTERMEDIATE TIER 3310U30-1

INTRODUCTION

This marking scheme was used by WJEC for the 2019 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

AUTUMN 2019 MARK SCHEME

GCSE Mathematics – Numeracy Unit 1: Intermediate Tier	Mark	Comments
1(a) 8 × 20 ÷ 5 or 1.6 × 20 or equivalent 32 (km)	M1 A1	Allow calculation 1.5 × 20 or 1.61 × 20 Allow FT answer (1.5 × 20 =) 30 (km) or (1.61 × 20 =) 32.2 (km)
		If no workings shown accept an answer of 32 (km) and allow an answer of 30 (km) or 32.2 (km)
1(b) (100 ×) 180 ÷ 3600 or <u>180</u> or 1/20 or equivalent 3600	M1	M0 for 3600 ÷ 180 unless sight of 1/20 or equivalent Allow M1 for sight of 180 ÷ 3600 (= 20 or 30 or) Accept '10% = 360, 5% = 180' for M1 A1
5 (%)	A1	Allow M1 A1 from sight of 3600/180 = 5(%)
		If no marks, award SC1 for an answer of 95(%)
1(c) 5 ÷ 3 or 500 ÷ 3 1.6(66) or 166(.66)	M1 A1	Accept 501 ÷ 3 Ignore further incorrect digits beyond either 1.6 or 166 Accept 1.67 or 167. Allow 160,170 or 1.7
167 (cm) or 1.67 (m)	A1	CAO Do not accept 1.67 cm or 167 m (units incorrect)
1(c) Alternative method using trials: Charge for 1(.)66 is (£)4(.)98(p) or 1(.)67 is (£)5(.)01	М2	M1 for correctly evaluated charge for at least 2 heights, provided trial is $184 \ge h \ge 150$
167 (cm) or 1.67 (m)	A1	CAO Do not accept 1.67 cm or 167 m (units incorrect)
		Note: 166 × 3 = 498, 167 × 3 = 501

2(a) (10 + 5) × 3 or 10 × 3 + 5 × 3 (£)45	M1 A1	
2(b) 72	B1	Allow unambiguous indication of both 27 and 45
2(c) <u>10</u> 67	B1	
2(d) (Earphones £) (30 + 22) × 15 (= £780)	M1	
(USB leads £) (22 + 5) × 3 (= £81)	M1	
(£) 861	A2	CAO ISW A1 for (£)780 or (£)81
		If Friday used, award SC2 for an answer of $(£)570$ or SC1 for correct method for Friday
2(d) Alternative method 1 30 ×15 + 22×15 + 22×3 + 5×3 (= 450 + 330 + 66 + 15) (£) 861	M2 A2	M1 for the sum of any 2 of these products CAO ISW A1 for sight of any two of 450, 330, 66 and 15 If Friday used, award SC2 for an answer of (£)570 or SC1 for correct method for Friday
2(d) Alternative method 2 30 ×15 + 22×(15 + 3) + 5×3 (= 450 + 396 + 15) (£) 861	M2	M1 for sight of 2 nd term or for the sum of 1 st and 3rd of these products
	7.2	A1 for sight of 396 or for sight of 450 and 15 If Friday used, award SC2 for an answer of (£)570 or SC1 for correct method for Friday

3(a) States or implies 'Can't tell' with a reason, 'diagram doesn't show how accurate the homew was', 'it only gives the times spent on homework', 'doesn't say what the students marks were', 'doesn't show if students got homework correct of not',	e.g. E1 rork	Allow, e.g. 'the given information (only) shows they attempt homework' 'graph doesn't give this detail', 'diagram doesn't show data for that', 'because it doesn't specify it', 'because there is no data about it', 'it says "attempted" doesn't say if they were right or wrong', 'it (only) shows times', 'doesn't show percentages', 'no results available', 'it doesn't say if they had it wrong or not', 'no marks' Do not accept, e.g. 'we don't know how many marks there are to be earned', 'it shows frequency', 'doesn't show how much homework to get a mark', 'because there is no correlation with the graph', 'because it doesn't state what the homework was out of'
3(b) 5 + 9 + 11 + 7 + 4 36 (students)	M1 A1	Allow M1 if one error in working with 5 numbers (check diagram also, but intention to add must be clear) CAO
3(c) <u>11</u> 25	B2	ISW B1 for/25 or 11/ provided not from incorrect working (e.g. 4 + 7 + 11 = 22, then 22/30 = 11/15 is B0) B1 for an answer of 44% if 11/25 not previously seen
4(a) 20 (knots)	B1	
4(b) 2.3(0) + 2.3(0) + 1.15 or 2.30 + 3.45 or 2 × 2.875 or 5 × 1.15 or equivalent 5 75 (miles per bour)	M1	Any correct method

5. (Fresh water charge £) 20 × 1.1(0)	M1	(= £22)
(Waste water charge £) 0.80	× 20 × 1.50	M2	(= £24) M1 for either 0.80 × 20 (= 16m³) or 20 × 1.50 (= 30)
(Total bill £22 + £24 =) (£) 46		A1	CAO
			Award M2 (waste water) and SC1 for an answer of $\pounds 28.4(0)$ (from fresh water (4 × 1.10 =) $\pounds 4.40 + \pounds 24$ for waste) OR Award M1 and SC1 for any one of the following: • sight of (£)22 and (£)17.6(0) (22 & 0.8 × 22) • an answer of (£)39.6(0) (22 + 0.8 × 22)
6. (Cost of buying pears is £) 2.5 × 3.4 equivalent	0 or (£)8.5(0)	M1 A1	Accept 850p or £8.50p Do not accept 8.50p or £850
(Cost of apples is £) 12.40 – 8.50	(£)3.9(0)	M1 A1	FT 'their £8.50' FT 'their 8.50' provided ≠ (£)3.40
(Cost of 1 kg of apples is £) 3.9(0) ÷ 3	(£) 1.3(0)	M1 A1	FT 'their £3.90' FT 'their 3.90' provided ≠ whole number multiple of 3 FT provided correct to a penny (rounded or truncated)
			(Note: 12.40 – 3.40 = 9, 9 ÷ 3 = (£)3 is awarded M0 A0 M1 A0 M1 A0)
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.

B1	All groups shown need to have no gaps or overlaps
	Allow if lower age covers 18 or younger, i.e. lower age must include 18 e.g. '18 to 21, 22 and over', 'Under 18, 18 and over',
	Allow if upper age covers 50 (or older), i.e. upper age must cover at least up to 50 e.g. '18 – 30, 31 – 50'
	Allow, e.g. '0 – 20, 21 – 50, 51+'
	Do not accept, e.g. 'Under 18, over 18', '0 – 20, 21 – 50, 50+ ', '15<18, 18<21, 21<25, 26+', '15<18, 19<21, 22<25, 26+',
B1	 Allow if: a 'neutral' category not given there is an imbalance between 'happy' and 'unhappy' type categories
	Accept appropriate use of smiley and sad faces
	Allow a mix 'happy, sad, not sure' with some text and some emojis
	Do not accept, e.g. 'scale of 0 to 10' without stating which end of the scale is unhappy or happy, 'yes, (sometimes), no'
	B1

8(a) Short diagonal 40 (cm) and longer diagonal 50 (cm)	B1	Check diagram
(longer diagonal should be >) 1.20 × 40 or equivalent, OR (shorter diagonal should be <) 50 ÷ 1.2 OR (100 ×) 50 40	M1	 FT 'their 40' and 'their 50' provided at least one of these values is correct 'their 40' ≠ 20 'their 50' ≠ 22 or 28
(longer diagonal should be >) 48 (cm), OR (shorter diagonal should be <) 41.6(6 cm) OR ((100) $\times \frac{50}{40}$ =) 1(.)25	A1	FT
Conclusion, e.g. 'Yes (certain to fly in strong wind)' 'Yes as 48 < longer diagonal' 'Yes (125% > 120%)' 'Yes (125 > 12(0))	E1	FT provided M1 awarded
		used in (b)
8(b) (Method to calculate area) e.g. • 1/2 × 40 × 50 • 2 × 1/2 × 20 × 22 + 2 × 1/2 × 20 × 28 (=440 +560) • 1/2 × 40 × 22 + 1/2 × 40 × 28	M2	FT 'their 40' and 'their 50' Allow if working for area seen in (a) and used in (b) M1 for correct method for at least 2 of the 4 possible triangles, e.g. implied from sight of 20 × 22, 440, 20 × 28 or 560
(Area of the kite) 1000 (cm²)	A1	CAO
(Length of tail) 3.1 (m)	B1	FT provided at least M1 previously awarded for correct length selected from choice of the correct group
9(a) Method of comparison, e.g. • per 50g • for 2000g	M1	Needs to show attempt to compare at least 2 of the 3, e.g. comparing 500g Allow for sight of 2 × (0.)65
Correctly evaluated comparison for 2 of the 3 sizes	A1	Allow for sight of $(\pounds)1.3(0)$ or $130(p)$ Ignore incorrect units50g100 g1 kg2000gStr 500g12.5 p25p£2.50£5Fus 400g12 p24p£2.40£4.80Rig 250g13 p26p£2.60£5.20g per pg per £Str 500g4 g400 gFus 400g4.166 g416.66 gRig 250g3.846 g384.61 g
Correctly evaluated comparison for all sizes, may be different methods for different stages, AND conclusion '(400g) Fusilli is best value for money'	A1	 Consistent units that are not obviously incorrect are required, or allow no units given Examples: Comparison of 500g with 250g then 250g with 400g not a full comparison of all 3 sizes Comparison of 500g and 250g at 500g and then 500g and 400g at 2000g, possible M1, A1, A1

9(b)(i) 3 × 48 ÷ 4 36 (chillies)	M1 A1	
9(b)(ii) 0.88 (× 2) × 20 ÷ 4 ÷ 2.2	M1 M1	M marks can be awarded in either order (= $(2 \times) 4.4$) Or equivalent full method that could lead to a correct answer (Note: $2 \times 0.88 \times 20 \div 4 = 2 \times 4.4$ or 5×1.76)
4 (kg)	A1	CAO If no marks, award SC1 for sight of (2 × 0.88 =) 1.76 (lbs)
9(c) Conversion to cm, e.g. 5 × 1000 × 100 (× 7) 3.5 × 10 ⁶ (cm)	M1 A2	 (= 500 000 (× 7)) A1 for any one of the following: an answer of 3 500 000 (cm) 3 500 000 (cm) implied by incorrect standard form, e.g. 35 × 10⁵ for correct expression of 'their 3 500 000' in standard form provided from 5 × 1000 × 100 × 7 if 7 has been omitted, for an answer of 5 × 10⁵ If no marks, award SC1 for 'their number of cm', n, provided n < 0.001 (n < 1 × 10⁻³) or n >1000 (n > 1 × 10³), correctly written in standard form
10. Sight of 300 000 (pesos) or 100 000 (pesos) or sight of 500 000 – 200 000 and 600 000 – 500 000	B1	Ignore £ or other currency for pesos May be implied Allow for sight of 200 000 – 500 000 and 500 000 – 600 000
(Tax at 10%) 0.10 × (500 000 – 200 000) or 0.10 × 300 000 or equivalent	M1	FT use of 'their (500 000 – 200 000)' from an error in subtraction
30 000 (pesos)	A1	CAO, not FT
(Tax at 35%) 0.35 × 100 000 or or 0.35 × (600 000 – 500 000) or equivalent	M1	FT use of 'their (600 000 – 500 000)' as 'their 100 000' from an error in subtraction
35 000 (pesos)	A1	CAO, not FT
(Total tax due) 65 000 (pesos)	B1	FT 'their 30 000' + 'their 35 000' provided both M1 marks previously awarded
		Note: If bounds are taken as 1 peso different to those above, award B0 to start, but FT for amounts 1 peso different to those shown above, including award of possible A marks

11(a) Sight, for the garage, of 2.55(m) or 255(cm)	B1	Provided not from incorrect working (i.e. $40 \times 5 \pm 55 = 255$ is awarded B0)
Sight ,for the boxes, of 35(cm) and 52.5(cm)	B1	(i.e. +0 × 5 + 55 = 255 is awarded bb)
255 – (5 × 35 + 52.5) or 255 – 175 – 52.5 or 255 – 227.5 or equivalent	M1	FT provided 250 <'their 255'≤ 260 or 2.5<'their 2.55'≤ 2.6 and provided 30 ≤ 'their 35' <40 and 50 ≤ 'their 52.5' <55 FT from consistent place value error for a similar range for 'their bounds'
27.5 (cm) or 0.275 (m)	A1	CAO. ISW
11(b) 56 ÷ 0.7 or equivalent (£) 80	M1 A1	
12(a) 104 seconds	B1	
12(b) 86 seconds	B1	
12(c) Sight of median 1 st July 2018 78 (seconds) AND Sight of median 1 st July 2019 56 or 57 (seconds) AND States or implies 'Yes'	B2	Check the diagrams Allow statements without giving medians, e.g. 'medians are (just) less than 80 and less than 60 respectively' If medians are stated they must be correct, otherwise possible maximum of B1 B1 for • 1 of the medians correct with an appropriate FT interpretation, or • both medians correct without correct interpretation or with incorrect interpretation
12(d)(i) 100 (seconds)	B1	
12(d)(ii) (0.75 × 80 =) 60 (calls) 72 (seconds)	M1 A1	60 seen in the answer space is awarded M1 A0 If no marks, award SC1 for a misread of the graph implied from sight of answers 66, 76 or an answer between 71 and 73 (excluding 72)

13(a) 18/24 ×20 or 3/4 × 20 or 20/24 × 18 or 5/6 × 18 or 18 ÷ 1.2 or 18 – 18/6 or equivalent	M1	
15 (cm)	A1	
13(b) 20/24 × 42 or 5/6 × 42 or 42 ÷ 1.2 or 42 × 15/18 or 42 ÷ 18/15 or 42 – 42 ÷ 6 or 42/24 × 20 or 7/4 × 20 or equivalent	M1	FT 'their scale factor' or 'their 15' from (a)
35 (cm)	A1	
35 (cm) with 'No' stated or implied OR States or implies 'No' with a reason, e.g. 'gatepost is only 30 cm wide', '35 (cm) > 30 (cm)',	E1	FT 'their 35' with appropriate interpretation provided M1 previously awarded

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