GCSE MARKING SCHEME

SUMMER 2019

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

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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.

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WJEC GCSE MATHEMATICS - NUMERACY (3310U20-1)

SUMMER 2019 MARK SCHEME

GCSE Mathematics – Numeracy Unit 2 Foundation Tier	**Mark**	**Comment**
1(a) 128.9 (pence) × 40 (litres) = (£)51.56	M1 A2	Allow incorrect place value Allow £51.56p A1 for sight of digits 5156 with incorrect place value or units (e.g. £5156 or 5156p or 51.56p) Unsupported sight of digits 5156 implies M1A1 ISW Treat use of 127.9 as MR (-1 from A marks only)
Alternative method *(128.9 (pence) ÷ 100 =) (£)1.289* *(£)1.289 × 40 (litres)* *(£)51.56*	*B1* *M1* *A1*	*B0 for (£)1.28 or (£)1.29* *Allow use of (£)1.28 × 40 (litres) or (£)1.29 × 40 (litres)* *Note: (£)1.28 × 40 (litres) = (£)51.2(0)* *(£)1.29 × 40 (litres) = (£)51.6(0)* *Unsupported (£)51.2(0) or (£)51.6(0) implies B0M1A1* *ISW*
1(b) 4438 ÷ 35 126.8 (pence)	M1 A2	Allow 44·38 ÷ 35 A1 for sight of the digits 1268 with incorrect place value or units (e.g.£126.8 or (£)1.268 or (£)1.27 or 127(p)) Unsupported sight of digits 1268 implies M1A1 ISW
2(a) 39 000	B1	
2(b) nineteen thousand, two hundred and fifty-one	B2	B1 for identification of or use of correct value (e.g. sight of 19 251, or words resembling 19 251 with incorrect place value) Allow B1 for one hundred and fifty-two thousand, seven hundred and twenty-one
2(c) 26 332	B1	If no number circled, accept 26 332 in correct place in table
2(d) 146 940	B1	If no number circled, accept 146 940 in correct place in table
2(e) 1 000 000 – 562 016 437 984	M1 A1	M1 for intention of finding the difference. Allow 1×10^n - 562 016 (providing $n \geq 5$) CAO

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3(a) ✓ Evidence of counting area Area in range 64 to 71 (cm^2 or m^2) Area × (£)12.50 Answer in range (£)800(.00) – (£)887.5(0)	 M1 A1 M1 A1	 Look at diagram F.T 'their area' × (£)12.50 If units are given than they must be correct. 64 × 12.50 = 800 65 × 12.50 = 812.50 66 × 12.50 = 825 67 × 12.50 = 837.50 68 × 12.50 = 850 69 × 12.50 = 862.50 70 × 12.50 = 875 71 × 12.50 = 887.50
3(b) Circle with radius 3cm centred at P OVERLAY	B2	Allow radius ± 2mm B1 for circle of radius of 3cm not centred at P B1 for circle of diameter of 3cm centred at P B1 for partially completed circle within the tolerance 'Freehand circle' B0 unless within the tolerance on the overlay
3(c) 6m	B1	
4. ✓ (No of SEATED tickets =) 0.35 × 140 = 49 (No of STANDING tickets = 140 – 49 =) 91 (Cost of SEATED tickets =) 49 × (£)84.5(0) OR (Cost of STANDING tickets =) 91 × (£)49.5(0) (Cost of tickets =) (£)4140.5(0) + (£)4504.5(0) (£)8645(.00)	 M1 A1 B1 M1 m1 A1	 Or equivalent full method May be implied in later working FT 'their derived 49'. May be implied in later working FT 'their 49' FT 'their 91' M1 for sight of (£)4140.5(0) OR (£)4504.5(0) FT 'their (£)4140.5(0)' + 'their (£)4504.5(0)'
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

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5(a) 180(°) – 40(°) – 40(°) 100(°)	M1 A1	Accept embedded answers
5(b) obtuse angle	B1	If incorrect, F.T their answer for angle b in 5(a)
5(c) Full explanation e.g. "(there should be 15 because) 1+2+3+4+5 = 15" "(there should be 15 because) (6)+4+5" "you have to add an extra 9" "it's a triangular number"	E1	Allow "it's 15 because every row goes up one" Accept complete diagram of 15 balls E0 for correctly completed diagram followed by an explanation which contradicts the diagram
5(d) likely	B1	
6(a)(i) $\frac{80 \pm 2}{360}$ or $\frac{20}{90}$ $\frac{2}{9}$	M1 A1	Allow use of '÷' for M1 FT only when simplifying possible, 78/360 = 13/60 81/360 = 9/40 82/360 = 41/180
6(a)(ii) A correct numerator or denominator in any of the following proper fractions: $\frac{3.5}{14.5}$ or $\frac{14}{58}$ or $\frac{7}{29}$ $\frac{7}{29}$	M1 A1	Must be in a proper fraction Allow for sight of 3.5 ÷ 14.5 or 14 ÷ 58 or 7 ÷ 29
6(b) Sight of $\frac{2}{14.5}$ (× 100) or $\frac{8}{58}$ (× 100) 13.79(...%) or 13.8(%) or 14(%)	M1 A1	FT 'their 14.5' or 'their 58' from (a)(ii) provided ≠ 90 If restarting, allow an error in a convincing sum to 'their total' for M1, but A0 Do not accept 13(%) or 13.7(%) (but unsupported this does imply M1)
6(c) (Ffordd Owain) 140(°) ± 2(°) $\frac{140 \pm 2}{360} \times 90$ or (140 ± 2) × 90 ÷ 360 or (140 ± 2) ÷ 360/90 35 (pairs) (Arthur Avenue 4 × 4 =) 16 (pairs of sunglasses) (Difference) 19 (pairs of sunglasses)	B1 M1 A1 B1 B1	May be seen by Saturday on the pie chart May be seen by Saturday on the pie chart Answer must be a whole number. Accept 16 shown on the pictogram unambiguously for Saturday FT 'their Ffordd Owain total' – 'their Arthur Avenue total' for Saturday, provided 'their Ffordd Owain total' ≠ 90 and ≠ 140 ± 2, and 'their Arthur Avenue total' ≠ 4

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<table>
<tr><td>7(a)

Method to compare, e.g.
• (Per kg price in SuperM) 1000 × 27 ÷ 450
• (1g cost of each, SuperM and FairMart)
27 ÷ 450 and 57 ÷ 1000
• (g per penny for SuperM and FairMart)
450 ÷ 27 and 1000 ÷ 57
• (450g at Fairmart) 57 × 450 ÷ 1000
• (SuperM) 11 × 450(g) with 11× 27(p) AND
(Fairmart) 5 × 1000(g) with 5 × 57(p)

Accurate comparison calculation, e.g.
• (Per kg price in SuperM) 60(p)
• (1g cost of each, SuperM and FairMart)
0.06(p) and 0.057(p)
• (g per penny for SuperM and FairMart)
16.6(66... g per penny and 17.5(4... g per penny)
• (450g at Fairmart) 25.65 (p) (< 27p)
• (SuperM) 4950(g) for (£)2.97 AND
(Fairmart) 5000(g) for (£)2.85

Conclusion, e.g.
‘(Buying carrots from) FairMart (is better value for money.)</td><td>

M1

A1

E1</td><td>Ignore incorrect units or lack of units for M, A and E marks
Needs to show comparing like quantity with like, unless considering larger quantities where working shows a greater quantity for less money at Fairmart (e.g. 4950g with 5000g)

In cost per kg in SuperM, allow truncation of (1000 ÷ 450 =) 2.222.... to 1 or more decimal places to give 59.4, 59.94, 59.994, etc when × 27(p)
Accept comparison given in pence

<table><tr><th></th><th>1 g</th><th>50g</th><th>450g</th><th>1kg</th><th>9kg</th></tr><tr><td>SuperM</td><td>0.06 p</td><td>3 p</td><td>27 p</td><td>60 p</td><td>£5.40</td></tr><tr><td>FairMart</td><td>0.057 p</td><td>2.85 p</td><td>25.65 p</td><td>57 p</td><td>£5.13</td></tr></table>
<table><tr><th></th><th>Per 1 p</th><th>Per £1</th></tr><tr><td>SuperM</td><td>16.66.. g</td><td>1666.66..g</td></tr><tr><td>FairMart</td><td>17.54..g</td><td>1754.36..g</td></tr></table>
FT for ‘their costs’ provided M1 previously awarded</td></tr>
<tr><td>7(b) (Carrots) 2812.5 (g)
(Stock) 5 (litres)
(Cream) 25 (tablespoons)

(Onions) 12 or 13</td><td>B2

B1</td><td>Mark recipe card as their final answer if complete
Accept 2812(g) or 2813(g) for carrots
Allow 2.812(5) k(g) or 2.813 k(g) ('k' must be inserted)
B1 for any 2 of these 3 answers correct

Must be a whole number of onions

If no marks, award SC1 for answers leading to quantities of carrots, stock and cream in the ratio 450 : 0.8 : 4, e.g. 5625, 10, 50, or
3150, 5.6, 28, or
11250, 20, 100
provided all quantities are increased</td></tr>
<tr><td>8(a)(i) 18:30, Saturday</td><td>B1</td><td></td></tr>
<tr><td>8(a)(ii) 16:00, Saturday</td><td>B1</td><td></td></tr>
<tr><td>8(b) 320 ÷ 0.61 or 524(.59…)
525 (AUD)</td><td>M1
A1</td><td></td></tr>
</table>

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<table>
<tr>
<td>9(a) 3.25 + 4× 2.4(0)
(=) (£)12.85</td>
<td>M1
A1</td>
<td>If no marks, award SC1 for an answer of any of the following:
<table>
<tr><th>Answer</th><th>From</th></tr>
<tr><td>(£)10.45</td><td>3.25 + 3×2.40</td></tr>
<tr><td>(£)11.97 (not for (£)11.96)</td><td>3.25 + 3(38/60) × 2.40</td></tr>
<tr><td>(£)17.4(0)</td><td>3.25 + 4 × 2.40 and incorrect BIDMAS</td></tr>
<tr><td>(£)22.6(0)</td><td>3.25 + 2.40 × 4 and incorrect BIDMAS</td></tr>
</table></td>
</tr>
<tr>
<td>9(b) (Minimum time) 61 minutes</td>
<td>B3</td>
<td>B2 for an answer of 1 hour 1 minute
OR
B1 for sight of any one of the following
• (8.05–3.25)÷2.4(0)
• 3.25 + 2.4(0) + 2.4(0) (= 8.05)
• 4.8(0)÷2.4(0) (= 2 hours)
• 2 hours

OR an answer of a number of minutes >61 but ≤120</td>
</tr>
</table>

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10(a)(i) Reason, e.g. ‘find out if too far to go swimming’, ‘find out if there is a pool nearby’, ‘interesting to explore between distance people live from the pool and how often they use the pool’ ‘to find out how far people would travel to get to the sports centre’, ‘show relationship between how frequently they go swimming and distance travelled’, ‘see how far people travelled’, ‘to analyse the distance people travelled’, ‘to find out if people who live close by go more often’, ‘distance can affect participation’	E1	Allow, e.g. ‘to see whether people close by use the **gym** more’, ‘shows how far people are willing travel’, ‘people who live close by go more often’, ‘distance affects participation’ Do not accept, e.g. 'not a biased question', ‘anyone can answer it’, ‘it would give a numerical answer’, ‘to see how people go to the sports centre’, ‘data can be grouped’, ‘data can be analysed’
10(a)(ii) Difficult to analyse because..., e.g. ‘no categories’, ‘vague (question)’, ‘it is not specific’, 'need time frame', ‘it could be weeks, months, years’ 'don't know what often means', ‘no time period given’, ‘it is an open question’, ‘may not be about swimming in this sports centre’	E1	Do not accept, e.g. ‘they may not remember’, ‘they don’t know’, ‘they might not go swimming’
10(a)(iii) Appropriate **question** and at least 3 suitable categories with no gaps or overlaps, e.g. ‘under 20 minutes, 20 minutes to one hour, more than one hour’, ‘1 hour or less, more than 1 hour but less than 2 hours, 2 hours or more’	B2	Ignore gaps in continuous data provided not greater than 1 minute Allow 2 suitable groups with the third group as ‘more’ or similar Accept if options do not start at zero, provided the first option starts below 31 minutes Provided an appropriate question is given: Working in **minutes** allow: • B2 for 0 – 30, 31 – 40, 41 – 50 • B1 for 0 – 30, 30 – 50, 50 – 70 Working in **hours** allow B1 for any of the following • 0 – 1, 1 – 2, 2 – 3 • 0 – 1, 2 – 3, 4 – 5 Award B1, if the B2 criteria would be met apart from having any one of the following errors: • First option starts between 31 minutes and 1 hour as lower bound, • There is a missing or inappropriate question • Poor or incorrect use of inequalities is seen
10(b)(i) 4 (°C)	B1	(28 – 24 = 4) Do not accept from incorrect working, e.g. 29 – 25
10(b)(ii) 36 (minutes)	B1	Accept answers in the inclusive range 35 minutes to 37 minutes

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