GCSE MARKING SCHEME

SUMMER 2019

**MATHEMATICS – COMPONENT 1
(FOUNDATION TIER)
C300U10-1**

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.

	Mark	Comment
1. (a)(i) 50	B1	
(a)(ii) 4.5 oe	B1	not for 4 rem 5
(b)(i) $\dfrac{31}{100}$	B1	or equivalent fraction
(b)(ii) 31(%)	B1	
(c) 4.601 indicated	B1	
(d) $45 \div 5 \times 4$ or $45 \times 4 \div 5$ si	M1	Implied by 9×4 or $180 \div 5$; may be in stages
36	A1	CAO
	(7)	
2. (a)(i) B indicated	B1	
(a)(ii) 3 indicated	B1	
(b) sphere indicated	B1	
	(3)	
3. (a) $12 \times 4.5(0)$	M1	Must be seen
54	A1	CAO; not from wrong working; sight of 54 does not imply M1 A1

Valid conclusion e.g.
      10% of 60 = 6 **and** 60 − 54 = 6
     or 60 − 54 = 6 **and** $\dfrac{6}{60} = \dfrac{1}{10}$ (=10%)
     or 60 − 6 = 54
	A1	or equivalent

Alternative method: *60 ÷ 12*	*M1*	Must be seen
5	*A1*	
Valid conclusion e.g. *10% of 5 = 0.5(0)* ***and*** *5 − 4.5(0) = 0.5(0)* *or 5 − 4.5(0) = 0.5(0)* ***and*** $\dfrac{0.5}{5} = \dfrac{1}{10}$ *(=10%)*	*A1*	
(b) 630 ÷ 30 si	M1	Allow for $630 \div k$, where k = 28, 29 or 31; may be in stages but $600 \div 30$ only is M0
21	A1	CAO; allow for e.g. $30\overset{\scriptstyle 21}{\overline{)630}}$
	(5)	

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4.(a)(i) Labels on both axes	B1	horizontal axis labels may be on bars; at least the bars labelled with the country names; allow abbreviations e.g. B, K, J, S
Uniform scale on vertical axis	B1	at least 2 values; must start with 0
All bars of equal width and correct height	B1	heights: 17, 12, 12, 6 mark intent allow inconsistent-width gaps or no gaps
(a)(ii) 2 South Africa	B2	B1 for each; allow abbreviations for South Africa if clear
(b) $(70 - 18) \div 2$ 26	M1 A1	May be in stages If no marks then SC1 for two improving trials on $x + x + 18 = 70$ oe
	(7)	
5.(a) 30 40 27 45	B1	
(b) $\frac{5}{16}$ ISW	B2	B1 for a numerator of 5 or for a denominator of 16 in final answer or for $\frac{6}{16}$ oe or for $\frac{12}{16}$ oe seen
	(3)	
6. (a)(i) (3, 4)	B1	
(a)(ii) C marked at $(-1, 1)$	B1	Allow unambiguous mark at $(-1, 1)$
(b) D marked at $(-5, 4)$ and 8 cm	B2	B1 for D correctly marked or B1STRICT FT for 'their length AD'; $\pm$ 2mm Allow unambiguous mark at $(-5, 4)$
	(4)	
7. (a)(i) $7a - 4b$	B2	Mark final answer for B2 or B1 B1 for $7a + kb$ or for $ka - 4b$
(a)(ii) $1 + 4c^2$	B1	Mark final answer
(b)(i) 10.5	B1	
(b)(ii) USA size -1	B1	allow equivalent in words or e.g. USA -1
	(5)	

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8. (a) Appropriate method for calculating 28×4	M1				
112	A1		Typical Values	per 100 ml	per bottle
0.1	B1		Energy	28	112
			Carbs	6·25	25
			sugars	4	16
			Salt	0·1	0·4
		If no marks then SC1 for evidence of multiplying by 4 or dividing by 4 in a correct method e.g. 0.4 ÷ 4			
(b) 1200	B1				
1.2	B1				
(c) $\dfrac{16}{25} = \dfrac{64}{100}$ or $\dfrac{4}{6.25} = \dfrac{64}{100}$ (= 64%)	B1	or shows that $\dfrac{64}{100} \times 25 = 16$ or $\dfrac{64}{100} \times 6.25 = 4$ oe			
	(6)				

9.(a)(i) 1 + 3 = 4 si or 16.8(0) ÷ 8 (= 2.1(0))	M1	
16.8(0) ÷ 4 oe or 'their 2.1(0)' × 2	M1	NB 16.8(0) ÷ 4 or 16.8(0) ÷ 8 × 2 earns M1M1
(£) 4.2(0)	A1	CAO
(a)(ii) Yes indicated with valid reason/calculation e.g. '34.20 + 16.80 = 51' or '34 + 16 = 50' or '50 − 16.80 = 33.20' or '50 − 34.20 = 15.80'	E1	
(b) (£5 saving =) Tea and Cupcake	B1	May be in working or on answer line provided no contradiction or choice; answer line takes precedence.
Appropriate strategy to find the 2 drinks or 2 cakes e.g. at least 2 relevant trials of drinks/cakes or one relevant trial of drinks/cakes and comparison with 16.5(0) or considering how to make the odd 50p or considering the difference between the cost of cakes and the bill to see what drinks are possible	S1	May be awarded for similar strategies used to find the 3 drinks or 3 cakes using £21.50.
2 Flat whites and 2 Cake of the day slices indicated	B2	Implies S1; B1 for either 2 Flat whites or 2 Cake of the day slices May be in working or on answer line provided no contradiction no choice; answer line takes precedence.
	(8)	
10. (a)(i) 2.1 (hours)	B1	
(a)(ii) 1.7 (hours)	B1	
(a)(iii) $\dfrac{4}{12}$ oe, ISW	B1	
(b)(i) Plot at (0.7, 2.5) circled	B1	
(b)(ii) Correct plots at (1.8, 1.9) and (2.2, 2.4) only	B2	B1 for one correct plot; ignoring extra plots
(b)(iii) 0.6 (second run) or 0.8 (third run) identified	B1	si
$(0.8 - 0.6) \times 60$ or $48 - 36$ or 2×6 (minutes) oe	M1	FT 'their difference' provided one value correct;
12 (minutes)	A1	CAO If no marks then SC1 for $(2.5 - 2.2) \times 60$ leading to 18 minutes
	(9)	

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11.(a)	$\dfrac{9 \times 52}{2}$ oe	M1	may be stages
	234 (cm²)	A1	CAO; implies M1
(b)	Correct use of line of symmetry: 2(AB + BC) = 20 oe	M1	si; allow 40 − 10 − 10 (= 20) or $\dfrac{40}{2}$ (= 20) or 10 + 10 + … + … = 40 or 10 + 10 = 20
	Correct use of proportion: $(4 \times)\dfrac{10}{5}$ or 5x = 10 oe	M1	or 2 improving trials on e.g. AB + BC = 10
	8 (cm)	A1	CAO; implies M1 M1; may be on diagram
		(5)	
12. (a)	258° ± 2°	B1	
(b)			Use overlay
	Arc centre A radius 5 cm ± 2 mm	B1	
	Arc centre B radius 6 cm ± 2 mm	B1	If no arcs shown, but single point indicated as C, then allow either or both of the first 2 marks if it satisfies one or both criteria; may be below AB

If two points are drawn, each of which satisfies only one condition, then no marks |
| | Position of C unambiguously identified | B1 | FT 'their 5 cm ± 2 mm from A' OR 'their 6 cm ± 2 mm from B' provided at least B1 already awarded; must be above AB |
| | | (4) | |
| 13. (a) | 7 : 10 | B2 | B1 for any simplified ratio not in simplest form seen e.g. 21 : 30

If no marks then SC1 for an answer of 10 : 7 |
(b)	1 + 4 + 3 (= 8) si	M1	Allow for sight of 1 : 4 : 3 oe or x , 4x, 3x
	(96 ÷ 8) × 3 oe	M1	FT 'their 1 + 4 + 3' e.g. division by 7 is M0 unless it comes from 1 + 4 + 3 = 7
	(£) 36	A1	CAO
(c)	$(54 +)\dfrac{54}{10} + \dfrac{54}{10} \div 2$ oe	M1	e.g. (54 +) 5.4(0) + 2.7(0) or (54 +) 8.1(0)
	(£) 62.1(0)	A1	
		(7)	

		Answers may be seen on the diagram
14.		
TRS or *TSR* = 40° (Base angles of an **isosceles** triangle (are equal))	B1	If values not marked on diagram, angle labels must be correct; allow *S* =…. or *R* = ….

PTQ = 40°
(Corresponding angles (are equal))
    or
    QTR = 40° (Alternate angles (are
    equal)) **and** *PTQ* = 40° (Angles on
    a straight line (sum to 180))
	B1	FT 'their *TRS* or *TSR*'; if values not marked on
		diagram, angle labels must be correct; do not
		allow *T* = …..

(*x* =) 90° − 40° = 50° (*QTU* is a right angle) At least one correct reason stated appropriately	B1 E1	CAO as answer given; must be convinced they are not working back from the given value and full and correct method must be shown ***Alternative method:*** *Draws the line of symmetry, TM, of triangle RTS* *and MTS = 50°* *(TM is a line of symmetry or triangles RTM and* *STM are congruent or equivalent)* *B2* *(x =) 50°* *(Vertically) opposite angles* *B2*
	(4)	

15. (a)
    Valid explanation e.g.
    'He should have divided not
    subtracted.' or 'The correct answer is
    5.' or 'He should have worked out
    30 ÷ 6'
	E1	Must not contain incorrect statements

(b)
    275 (000) ÷ 5 = 55 (000) and
 	
    55 (000) × 3 = 165 (000) or
    165(000) ÷ 3 = 55(000) or
    165(000) ÷ 55(000) = 3
 	
    AND Yes indicated or implied
	B2	May be in one calculation
		e.g. $\dfrac{165}{275} \times 5 = \dfrac{165}{55} = 3$ or $\dfrac{165}{275} \times 5 = \dfrac{33}{55} \times 5 = 3$
		
		B1 for a partially correct solution e.g.
		275(000) ÷ 5 = 55(000) or
		165(000) ÷ 3 = 55(000) or
		55(000) seen or
		$\dfrac{165}{275} \times 5$ or
		275(000) ÷ 5 × 3; may be in stages

	(3)	

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16. (a)			
$\dfrac{27}{63} + \dfrac{49}{63}$ oe		M1	May have different common denominator for all marks
$\dfrac{76}{63}$ oe		A1	
$1\dfrac{13}{63}$		B1	FT 'their $\dfrac{76}{63}$' provided an improper fraction
(b)			
$\dfrac{2}{7}$ oe		B2	B1 for $\dfrac{6}{7} \times \dfrac{1}{3}$ oe seen
		(5)	
17.* (a)			
$40 \times 5 - 40$ or 40×4 (=160)		M1	
160×0.3 or $160 - 160 \times 0.7$ oe		M1	FT 'their $40 \times 5 - 40$' or 'their 40×4'
(£) 48		A1	CAO; implies M1 M1
			If no marks then SC1 for an answer of (£)20 or for an answer of (£)9.6(0)
Alternative method:			
(social life =) $0.3 \times 0.8 = 24\%$		*M1*	
20% is (£)40 4% is (£)8		*M1*	
(£) 48		*A1*	*CAO; implies M1 M1*
(b)			
$\dfrac{48}{200}\,(\times 100)$ or 0.3×0.8		M1	FT $\dfrac{\text{'their 48'}}{\text{'their 200'}}\,(\times 100)$ provided of equivalent difficulty
24(%)		A1	FT
		(5)	

18.*(a) $-4x = 11 - 19\,(= -8)$ or $4x = 19 - 11\,(= 8)$	B1	FT until 2nd error si
$x = 2$	B1	FT; mark final answer; allow 2 marks for $19 - 4(2) = 11$ oe
(b) $2x - 3 = 4 \times 3x$ or $\quad \dfrac{2}{4}x - 3x = \dfrac{3}{4}$ oe, si	B1	FT until 2nd error or separates fractions **and** collects terms
$10x = -3$ oe	B1	FT; allow for $-\dfrac{10}{4}x = \dfrac{3}{4}$
$x = -\dfrac{3}{10}$ oe; ISW	B1	FT 'their expression of the form $ax = b$, where $a \neq \pm 1$ and $b \neq 0$'
(c)(i) $3x > 5 - 2$ oe	M1	
$x > 1$ oe	A1	No marks for use of "=", unless finally replaced to give $x > 1$ then award M1 A1; mark final answer
(ii) Empty circle at 1 with arrow right	B1	STRICT FT 'their (c)(i)' provided an inequality; if a line drawn rather than an arrow then there must be no idea of termination and it must extend as far as the end of the number line
	(8)	
19.*(a) Valid comment e.g. 'Some of the data is lost' or 'There are too many categories for a pie chart' or 'It does not show coffee and green tea'	E1	Allow e.g. 'It does not show the value of sales'
(b) Valid comment e.g. 'The number of visitors seems to be decreasing' or 'The annual number is going down.'	E1	Ignore embellishments/superfluous comments about seasons. Allow e.g. 'From 2015 to 2018 the numbers have decreased.'
	(2)	

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20.*(a)			
1	B1	May be embedded	
(b)			
Method to find prime factors with two correct prime factors seen before the second error	M1	Ignore 1's; the two prime factors may be correct or correct FT after one error	
$2 \times 2 \times 2 \times 3 \times 7$ oe	A1	ISW	
(c)			
Attempts to find a common factor of 168 and 120	S1	e.g. May list some of the factors of both 168 and 120 or draw a Venn diagram with the factors of 168 and 120 correctly positioned	
Finds at least one common factor of 168 and 120 greater than 3	M1	FT 'their (a) and their (b)' 4, 6, 8, 12, 24	
24	A1	CAO Mark final answer	
	(6)		
21.*(a)			
50 inches = 127 cm	B2	B1 for e.g. 50.8 + 50.8 + 25.4	
Might possibly be safe and use of the limit of accuracy e.g. 'she could be only 126.9 cm tall' or 'Her height could be anywhere between 126.5 and 127.5.'	B1	NB bounds are not required, though could be used. Candidates must indicate they have interpreted the given limit of accuracy correctly in some way. Must not contain contradictions or errors.	
(b)(i)			
Valid assumption eg 'Jenna has not grown since she was last measured' or 'Jenna is **still** 127 cm' or Jenna has not had a growth spurt.' or 'Jenna is wearing the same shoes that she was when she was measured.'	E1	Any valid assumption that indicates that Jenna may no longer be the same height

Not for comments assuming her height is 127 or a rounded version of this, as this is given information | |
(b)(ii)			
Valid impact based on their assumption and decision in part *(a)* e.g. 'Jenna may now be definitely tall enough to ride.'	E1	Comments such as 'My answer would be different' are not acceptable	
	(5)		

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22.*(a)						B2	B1 for any two correct

x	−2	−1	−0.5	0	1
y	1	−1	−1.25	−1	1

(b) All 5 correct points plotted correctly and joined with a smooth curve	B2	Mark intent B1 for a smooth curve at least through 3 correct pairs of coordinates or for all of their 5 pairs of coordinates plotted correctly Allow 2 marks here if curve correct even if there is a slip in their table
(c) $x = -\dfrac{1}{2}$ oe	B1	Equation must be stated; check graph; not for $x = -\dfrac{1}{2}$ $y = -1.25$
(d) $(x =)$ 0.5 to 0.7 , −1.5 to −1.7	B2	or FT 'their curve' B1 FT for one correct root If their curve has more than 2 roots, they must give all their solutions for B2 and may omit one solution only for B1.
	(7)	
23.* $\begin{pmatrix} 5 \\ -1 \end{pmatrix}$	B2	Mark final answer for B2 B1 for each element or for $(\frac{1}{2}\mathbf{p} =) \begin{pmatrix} 2 \\ 1 \end{pmatrix}$ oe seen or for $\begin{pmatrix} 5 \\ -1 \end{pmatrix}$ or for $\begin{matrix} 5 \\ -1 \end{matrix}$ in working space without brackets; allow $\begin{matrix} 2 \\ 1 \end{matrix}$ seen for B1.
	(2)	