GCSE MARKING SCHEME

AUTUMN 2019

GCSE
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.

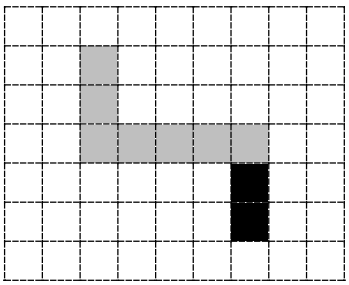
It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

GCSE MATHEMATICS

COMPONENT 1 - FOUNDATION TIER

AUTUMN 2019 MARK SCHEME

GCSE (9-1) Mathematics Component 1: Foundation Tier	**Mark**	**Comment**
1.(a)(i) 600	B1	
(a)(ii) 70	B1	
(a)(iii) 0.926	B2	B1 for attempt to subtract correct place values si; B1 implied by a decimal answer ending in 26 NB 1.061 is B0
(b) 41554	B1	
(c) $-1 > -2$ circled only	B1	
	(6)	
2.(a) Mark at $\frac{1}{4}$	B1	Mark intent
(b) 5 numbers with exactly 2 numbers less than 4	B1	
(c) 0.3	B1	
	(3)	
3.(a) Correct diagram: 	B1	Can be freehand
(b) Correct ruled right-angled triangle with short sides of 3 cm and 8 cm	B1	Mark intent
	(2)	

4.(a) 800 ÷ 5 + 100 si 260	 M1 A1	 Not just for substitution , must be correct order of operations
(b) (400 – 100) × 5 si 1500	 M1 A1	 Not just for substitution , must be correct order of operations Allow embedded answer if not spoiled
	(4)	
5. (a)(i) 15	 B1	
(a)(ii) 4	 B1	 Accept 4.0
(a)(iii) 1	 B1	
(b) $\frac{x}{2}+3=y$ indicated	 B1	
	(4)	
6(a)(i) 10	 B1	
(a)(ii) 14 + 15 + 22 + 21 + 12 + 18 (= 102) 102 ÷ 6 17	 M1 m1 A1	 or e.g. 12 + 14 + 15 + 18 + 21 + 22 FT 'their 102' CAO
(b)(i) 619, 3600, 4658, 12212	 B1	 Allow place names/abbreviations in the correct order (Pinestow, Elmvale, Copley, Tanham); If figs and place names stated, answer line takes precedence
(b)(ii) $(4700-3600)\div 4$ 275	 M2 A1	 M1 for sight of 4700 – 3600 If no marks, award SC2 for sight of (4700 – 619) ÷ 4 and answer 1021 or (4700 – 4658) ÷ 4 and answer 11 or SC1 for sight of (4700 – 619) ÷ 4 or (4700 – 4658) ÷ 4
	(8)	

7.(a)(i) Wednesday	B1	Accept any clear indication; B0 for -6 only
(a)(ii) 6.5	B1	Allow -6.5
(a)(iii) -5	B1	
(b)(i) 10	B1	
(b)(ii) 23	B1	Accept an answer in the range 22.5 to 23.5 (°F)
(b)(iii) No with either 18(°C) is 64 to 65(°F) or 67(°F) is 19 to 20(°C)	B1	Allow justification indicated on the graph. If both conversions are carried out then they must both be correct
	(6)	
8.(a)		Method for cost of tablet(s) without postage
$2 \times 240 - \frac{2 \times 240}{3}$ oe	M1	Accept for $240 - \frac{240}{3}$; not for use of 33% etc
(£) 320	A1	CAO
320 + 2 × 9.99	M1	FT 'their derived 320'; allow if 33% etc attempted; do not allow for 480 + 2 × 9.99
(£)339.98	A1	FT 'their derived 320' If M1 A0 M0 then award SC1 for a final answer of 169.99 (one tablet) or if no marks, award SC2 for a final answer of 333.32 ($\frac{1}{3}$ off inc postage) or SC1 for 499.98 $-\frac{499.98}{3}$ (may be in steps)
(b) 108 × 4 × 2 oe	M2	May be in steps M1 for 4 × 108 (= 432)
864	A1	CAO
	(7)	

9.(a) 16 tablets indicated and full justification e.g. 'Small bottle: 48 tablets costs £6.60, Large bottle: 48 tablets costs £7' or '24 of the smaller bottle would be £3.30' or 'Small bottle: 13(· ...)p per tablet, Large bottle: 14(·...)p per tablet' or The extra 8 tablets costs an extra £1.30. Half a bottle of 16 tablets costs £1.10.	B2	Allow e.g. 13p r 12 and 14p r 14 B1 for a correct decision and a partial justification e.g. 'Smaller bottle costs £1.10 for 8 tablets.' or '24 of the smaller bottle would be 'their 3.30.' or 'Small bottle: 13(· ...)p per tablet' or an attempt at full justification with an arithmetic error and their decision follows their working or full justification and 24 tablets indicated A statement of '8 tablets costs an extra £1.30' only is B0 even if they indicate the small bottle
(b) $5 \times 2 \times 20$ or $\frac{24000}{120}$ (= 200)	M2	M1 for $\frac{40}{8} \times \frac{10}{5} \times \frac{60}{3}$ si or $\frac{40 \times 10 \times 60}{8 \times 5 \times 3}$ si or at least two terms correct in $5 \times 2 \times 20$ oe; si or for 5, 2, 20 found without wrong working
$3600 \div (5 \times 2 \times 20)$ or $3600 \div \frac{24000}{120}$ oe	m1	FT 'their 200'; dep on at least M1 awarded accept e.g. $3600 \div \frac{40 \times 10 \times 60}{8 \times 5 \times 3}$ for this mark
18	A1	CAO
	(6)	
10.(a) 07:43	B1	Accept any unambiguous notation; allow 7 43
(b) Any answer between 19:33 and 20:23 exclusive	B1	
(c)(i) July	B1	
(c)(ii) Attempts to find time from 04:47 to 21:20	M1	STRICT FT 'their (c)(i)' for M1 only; the time difference being found must be **very clear**; sight of 04:47 to 21:20 and an answer 17 hours 27 minutes implies M1 (they have added 27 mins instead of subtracting)
16 hours 33 minutes	A1	CAO If June in (c)(i) and M1 awarded, award SC1 for an answer of 16 hours 19 minutes
	(5)	

11.(a) 6 points plotted correctly	B2	and no extra plots B1 for any 4 or 5 points plotted correctly and not more than 6 points plotted in total or for 6 points plotted correctly with at most 2 extra incorrect plots
(b) Valid comment e.g. 'It has a positive correlation' or 'As number of wet days in Anstown goes up, so does the number of wet days in Beeham.'	B1	Do not allow e.g. 'It rains more in Anstown than it does in Beeham.' or 'It is positive.'
(c) 4	B1	FT 'their scatter graph'
	(4)	
12.(a) 1.5 (km)	B2	B1 for 7 – 4 si or 3 cm or for sight of 3.5 km or 2 km Tolerance ±2mm on measurements
(b) $145 \pm 2°$	B1	
(c) Correct point marked: 5 cm ± 2 mm from *R* and on a bearing of $225° \pm 2°$ from *Q*	B2	B1 for an arc, centre *R*, radius 5 cm ± 2 mm or a point which is either 5 cm ± 2 mm from *R* or on a bearing of $225° \pm 2°$ from *Q*
	(5)	
13.(a) 15 (grandchildren) is $\frac{5}{7}$ si 3 (grandchildren) is $\frac{1}{7}$ oe si 21	 B1 M1 A1	 implied by $15 \div 5$ Implies B1 Allow for sight of 6 (grandchildren in Wales) or for $\frac{5}{7} = \frac{15}{21}$; implied by $(15 \div 5) \times 7$ CAO
(b) $(2 – 1.70) \times 400$ oe 120	M2 A1	M1 for 2×400 (= 800) or for $400 \times 1.7[0]$ (= 680) or for $2 – 1.7(0)$ (= 0.3(0)) CAO
	(6)	

14.(a) $\frac{560}{5+3}\times 5+\frac{560}{5+3}\times 3\times 1.5$ oe or $560+\frac{560}{5+3}\times 3\times 0.5$	M3	May be in steps; M2 for sight of $\frac{560}{5+3}\times 5\,(\times 1)$ (= 70 × 5 = 350) or $\frac{560}{5+3}\times 3\times 1.5$ (= 210 × 1.5 = 315) or $\frac{560}{5+3}\times 3\times 0.5$ (= 210 × 0.5 = 105) OR for 560 ÷ (5 + 3) (= 560 ÷ 8 = 70) **and** 5 + 3 × 1.5(0) (5 + 4.50 =9.50) or M1 for 560 ÷ (5 + 3) (= 560 ÷ 8 = 70)
(£) 665	A1	CAO
(b) $\frac{95}{5}-8-4$ or $\frac{95-(8\times 5+4\times 5)}{5}$	M2	M1 for sight of $\frac{95}{5}$ (= 19) or for 95 – (8 × 5 + 4 × 5) (= 95 – 60 = 35)
7	A1	
	(7)	

15.(a) $\left(\frac{3}{5}\text{ of } 45 =\right)$ 27 (prefer backstroke)	B1	
$\left(\frac{2}{3}\text{ of } 45 =\right)$ 30 (juniors)	B1	
$\left(\frac{1}{6}\text{ of } 30 =\right)$ 5 (junior and prefer butterfly)	B1	STRICT FT 'their 30' if an integer
2 (senior and prefer backstroke)	B1	STRICT FT 'their 27' – ('their 30' – 'their 5') B'fly: S 13, J 5, Total 18 B' stroke: S 2, J 25, Total 27 Total: S 15, J 30, Total 45
$\frac{2}{45}$ oe; ISW	B1	FT 'their 2' from their table
(b) (18 ÷ 3) × 11 or equivalent	M1	May be in steps
66	A1	If no marks, award SC1 for correctly finding the number of swimmers as 48; may be embedded in the ratio 48 : 18.
	(7)	
16. $x = 4y - 3$	B2	B1 for $4y = x + 3$ or $y - \frac{3}{4} = \frac{x}{4}$ If no marks then SC1 for a final answer of $x = 4y + 3$
	(2)	
17.(a)(i) 0.0048	B1	
(a)(ii) 1.15×10^{21}	B2	B1 for correct answer in incorrect form e.g. 11.5×10^{20}
(b) $(3 \times 10^6) \div (2 \times 10^6)$ oe	M1	Allow for $(3 \times 10^6) \div (1.8 \times 10^6)$
1.5	A1	FT 'their estimate' If M0 then allow SC1 for sight of $(2.99 \times 10^6) \div (1.799 \times 10^6)$
km	B1	Appropriate unit for their answer e.g. 1500 m gets M1 A1 B1; allow for 'km' even if no calculation attempted
	(6)	

18.*(a) Two distinct reasons based on sample size, location, time or bias. e.g. 'She needs to ask more than 20 people.' or 'She needs to vary the time that she asks people' or 'People at the bus station may be biased against cars'	E2	E1 for each valid reason; reasons need to be distinct; comments made regards time could be 'hours spent' or 'time of day' or 'days of the week attended' and these can be considered as distinct Allow e.g. 'It's only the first 20 people.' (sample size) or 'People might have to get on the bus.' (location) or 'It will be all school children at that time of day.' (time or bias) Do not allow e.g. 'People might lie' or 'People might not want to talk.'
(b) Two distinct criticisms based on time frame **and** response boxes. e.g. 'She has not said per day, per week etc' or 'The times are too vague' or 'There is nowhere to answer if you do not have a car' or ' 4 is repeated'	E2	E1 for each valid criticism; criticisms need to be distinct (one comment only on response boxes and one on time frame omitted) Allow e.g. 'It is not specific enough.' (BOD time) or 'People might not have a car.' (Response boxes)
	(4)	
19.* For the plan: draws a circle, radius 3 cm and for the side elevation: draws a 4 cm by 6 cm rectangle	B3	Circle must be drawn with compasses and rectangle must be ruled. B2 for either the plan or elevation correct or for good freehand sketches of both the correct circle and the correct rectangle or B1 for a circular plan with incorrect radius or for a rectangular side elevation with incorrect dimensions or for a good freehand circle for the plan or a good freehand rectangle for the elevation; may also have incorrect dimensions
	(3)	

20.*(a) (752 – 27 =) 725 725 ÷ 25 29	 B1 M1 A1	 FT 'their 752 – 27'
Alternative method 1: *752 ÷ 25 si* *30 remainder 2 or 30.08* *29*	 *M1* *A1* *A1*	
Alternative method 2: *At least two trials of 25 × n or 752 ÷ n, where n is greater than 20* *25 × 29 = 725* *29*	 *M1* *A1* *A1*	 *implies M1*
(b)(i) Valid explanation e.g. 'There are more guests so the food should not last longer.' or 'He has halved instead of doubling.' or 'The food will last for less time if there are more people.'	 E1	 'It is impossible' without further explanation is E0 Allow e.g. 'If you divide one side you have to multiply the other,' Do not allow e.g. 'You have to multiply not divide.' (too vague)
(b)(ii) 4 (days)	 B2	 B1 for a correct intermediate step e.g. 10 guests and 12 days or for $\frac{20\times 6}{30}$ oe si
	(6)	
21.* $7+\frac{5}{20}+\frac{9}{20}$ or $\frac{105}{20}+\frac{49}{20}$ oe; si **and** $3+\frac{5}{20}-\frac{9}{20}$ or $\frac{105}{20}-\frac{49}{20}$ oe; si $7\frac{7}{10}$ and $2\frac{4}{5}$	 M2 A2	 equivalents may be decimals 5.25 + 2.45 and 5.25 – 2.45 M1 for $5\frac{5}{20}+2\frac{9}{20}$ oe or $5\frac{5}{20}-2\frac{9}{20}$ oe or 5.25 + 2.45 or 5.25 – 2.45 CAO A1 for either or for a pair of correct, but unsimplified, answers
	(4)	
22.* (*BD* =) $\sqrt{6^2+8^2}$ 10 45	 M1 A1 A1	 Allow for comment e.g. 'Pythagorean triple is 6, 8, 10.' or '6, 8, 10 is a right-angled triangle.' (must be clear it is a triple and not just listing the 3 values from the diagram) Allow poor use of notation if intent is clear. does not imply M1 unless it is clear that *BD* = 10 (either in a statement, on the diagram or from $\tan x=\frac{10}{10}$). dep on all previous marks being awarded
	(3)	
23. m = 2 si c = 1 si y = 2x + 1	 B1 B1 B1	 could be gradient = 2 could be y-intercept = 1 Implies all 3 marks
	(3)	

24.* (a) $2x = 5$ $x = \frac{5}{2}$ oe, ISW	B1 B1	 FT from 'their $ax = b$' provided $a \neq b$ or 0 or 1 and $b \neq 0$; accept $\frac{b}{a}$ but if on FT $\frac{b}{a}$ simplifies to an integer the answer must be given as an integer. 'x =' can be omitted but must not be wrong if there. Correct answer implies first B1.
(b) $x = 3$ $y = 2$	 B1 B1	
(c) Line with solid circles at both ends starting at –2 and ending at 3	B1	
(d) $2x < 4 \times 3$ $x < 6$	 M1 A1	 No marks for use of "=", unless finally replaced to give $x < 6$ then award M1 A1. $x <= 6$ is A0
	(7)	
25* $\frac{1}{8}$ oe; ISW	 B2	 B1 for $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2}$ oe If no marks awarded, then SC1 for evidence of the only possible score being 1, 1, 1 e.g. in a partially complete list of possible scores with all other scores even and $1 \times 1 \times 1$ listed as odd
	(2)	