GCSE MARKING SCHEME

AUTUMN 2022

GCSE
MATHEMATICS – COMPONENT 2
(FOUNDATION TIER)
C300U20-1

INTRODUCTION

This marking scheme was used by WJEC for the 2022 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.

EDUQAS GCSE MATHEMATICS

AUTUMN 2022 MARK SCHEME

Component 2: Foundation Tier	Mark	Comment

1.(a) (£) 35.25
        3 (sets of spades)
        (£) 16.15
        (Total = £) 63.7(0)
	B1
	B1
	B1
	B1
		
		FT their values in the table
		Allow £63.70p

1.(b) (£) 6.37 ISW	B1	FT 'their 63.70' from (a)
1.(c) 6 (Beach balls)	B2	Allow for e.g. 'She can buy 4 and get 2 free.' 'Two lots of 3 balls.' B1 for sight of (£)12.8(0) OR 4 (balls), may be embedded OR 15 ÷ 3.2(0) (= 4.6875) OR £6.40 for three balls
	(7)	
2.(a) Three hundred and forty thousand, two hundred and five	B1	Do not penalise incorrect spelling.
2.(b) Any 6 small triangles shaded	B1	
2.(c) 2/10 circled	B1	
2.(d) -5 -3 3.45 3.6 6	B1	
2.(e)(i) 7543	B1	
2.(e)(ii) 3574	B1	
	(6)	
3.(a) 270(g) and 350(g)	B1	
3.(b) (Pear 270 ÷ 3 =) 90 (g) (350 – 90) ÷ 2 (Banana) 130(g)	B1 M1 A1	FT 'their 270' FT 'their derived 90' and 'their 350' from (a) FT
	(4)	
4.(a)(i) unlikely	B1	
4.(a)(ii) An even chance	B1	
4.(b) 	B1 B1 B1	Allow 3/12 oe and 11/12 oe as labels.
	(5)	

5. D and E
   B
   A and H
   C and G
	B1
	B1
	B1
	B1	

	(4)	
6.(a) 1 (hour) 44 (minutes) or 104 (minutes)	B2	B1 for 1.44 or 1:44 or for working to calculate the time from 08:45 to 10:29.

6.(b) 08:47	B2	Any clear indication; may be identified in the table.
		Allow for 8:47 OR 08:47 to 09:18 OR 08:47 – 09:18.
		B1 for sight of
		    (09:18 + 15 minutes =) 09:33
		  or (09:48 + 15 minutes =) 10:03
		  or (10:00 – 15 minutes =) 09:45
		  or (10:00 – 09:48 =) 12 (minutes)
		  or 08:15 (identifying the correct train)

	(4)	
7.(a)(i) 53 (pounds)	B1	Allow 52.66.. to 53 inclusive (pounds)
7.(a)(ii) 6 (kg)	B1	Allow 5.7 to 6 inclusive (kg)
7.(b)(i) 11.25 x 8 + 95 (€)185	M1 A1	May be seen in stages

7.(b)(ii)
(270 – 126) ÷ 11.25
	M2	May be seen in stages
		M2 may be implied by each of the following:
		
		   • 144 ÷ 11.25
		   • 126 + 11.25 × 12 = 261
		   • 126 + 11.25 × 12 AND 126 + 11.25 × 13
		   • 270 – 126 = 144 with 11.25 × 12 = 135
		
		M1 for 126 + 11.25 × n where n > 1 or
		M1 for 270 – 126 (= 144)
		M1 for 270 – 126 ÷ 11.25 (= 258.8)

12	A1	CAO An answer of 12.8 implies M2 A0 Award zero marks for an unsupported answer of 13.
	(7)	

8. (Swimming)		
2/3 x (320 + 7.25 x 5) or (320 + 7.25 x 5) – 1/3 x (320 + 7.25 x 5)	M2	May be seen in stages Award M1 for one of the following: • 320 + 7.25 x 5 (= 356.25) • 1/3 x (320 + 7.25 x 5) (= 118.75) • 2/3 x 'their total cost'
(£)237.5(0)	A1	CAO If units are given, they must be correct.
(Adventure centre) 0.85 x 13.6(0) x 25 or 13.6(0) x 25 – 0.15 x 13.6(0) x 25	M2	May be seen in stages Award M1 for one of the following: • 13.6(0) x 25 (= 340) or • 0.15 x 13.6(0) x 25 (= 51) or • 0.85 x 13.6(0) x n where n ≥ 1
(£)289	A1	CAO If units are given, they must be correct.
(Malik's choice) Swimming party clearly indicated	B1	STRICT FT provided at least M1 previously awarded and a total cost for each party is found.
	(7)	

9. The five correct numbers listed 21, 22, 23, 29, 29	B4	Check the conditions carefully if the numbers are not listed in ascending order B1 for each of the following: • The median of five numbers is 23. • The mode is 29 • The difference between the smallest and largest numbers is 8 If the boxes are used, they take precedence (unless clearly replaced).
124 (miles)	B1	FT from B2 or B3 provided five numbers are used
	(5)	
10.(a) A valid explanation e.g. 'company B might have more employees than company A' 'we don't know how many employees there are in each company' 'company A may have a bigger proportion of female employees, but it may have less employees overall'	E1	Allow e.g. 'one company might be smaller than the other' 'there are no numbers given so we can't be certain A has more than B' 'does not show the number of males or females' 'they only show the proportion of staff, not the number of staff' 'the number (of staff) in the two companies could be different' Do not allow e.g. 'there are no numbers given'

10.(b)
     30(%) or 65(%)
     (difference) 35 (%)
	B2
	B1
		B1 for 108/360 (x100) or 234/360 (x100)

Alternative method *(234 – 108) / 360 (x 100)* *35(%)*	*M2* *A1*	*M1 for 234 – 108 (= 126)*
	(4)	

11. Calculations that allow comparison
e.g. (100g) 2.21/5   AND   3.78/9
 	
   =(£)0.44(2..)   =(£)0.42
AND
   900g indicated
	M1
	
	A1
		e.g. (4500g) 2.21 × 9 AND 3.78 × 5
		
		     =(£)19.89 = (£)18.90
		AND
		   900g indicated
		
		If units are given, they must be correct.
		Note:
		
		|
			g per p	p per g

500g	2.26…	0.442
900g	2.38…	0.42	
	(2)	

12.(a) 5a	B1	

12.(b)
   4x = 2 + 5 or 4x = 7
   x = 1.75 or 7/4 or 1 ¾ ISW
	B1
	B1
		FT equation in the form 4x = a. Accept $\frac{a}{4}$ but if on FT it simplifies to an integer the answer must be given as an integer.
		
		Allow an embedded answer.
		Maximum of 1 mark if the answer is not fully correct.

12.(c) 7g - 42	B1	Mark final answer.
12.(d) 2(3x + 2)	B1	
12.(e)(i) 8x + 8x + 8x + 8x or 8x ✕ 4 = 32x	M1 A1	
12.(e)(ii) 8x ✕ 8x or $(8x)^2$ = $64x^2$	M1 A1	M0 for $8x^2$ If no marks in (e)(i) and (e)(ii) award SC2 for answers of $64x^2$ in (i) AND 32x in (ii).
	(9)	
13.(a) All values correct	B2	B1 for at least 5 correct values

(9)	18	27	36
4	8	12	(16)
(1)	2	3	4

13.(b) (chance of winning) 5/12 si
    108 ÷ 12 ✕ 5
    45 (times)
	B1
	M1
	A1
		FT 'their completed table'
		FT 'their 5' or 'their probability'
		FT provided it is a whole number
		45/108 is awarded B1 M1 A0

	(5)	
14.(a) (speed =) 31.5 ÷ 1.75 18 (km/h)	M1 A1	Allow 31.5 ÷ 1.45 (= 21.7…) or 31.5 ÷ 105 (= 0.3) for M1 CAO
14.(b) 31.5 ÷ 15 2 (hours) 6 (mins) or 126 (mins) si 6:06p.m. or 18:06	M1 A2 B1	 A1 for 2.1 (hours) A0 for 2 hours 10 minutes or 130 minutes alone Allow for 6:06 but not for 6:06 a.m. FT 'their 2 hours 6 minutes' or 'their 126 minutes' provided M1 awarded including answers of 6:10 p.m. or 18:10.
	(6)	

15. (x =) 42
 	
   (y =) (180 − 152) ÷ 2
 	
    = 14
	B1
	
	M1
	
	A1	

	(3)	

5

16. 25·5	B2	B1 for 25·4(8....) or 25·50 If no marks, award SC1 for an answer of 16·7 or 31·2 (from $\sqrt{(1456)} \div 1.3^3 - 0.7$ and $\sqrt{(1456 \div (1.3^3 - 0.7))}$
	(2)	
17. (volume =) $25 \times 40 \times 32$ $\qquad = 32000$ (cm³)	M1 A1	May be seen in stages.
$32000 \div 2000$ OR $32 \div 2$	m2	FT 'their 32000' m1 for the appropriate division with a place value error from an incorrect conversion e.g. $32000 \div 200$ or $320 \div 2$. Allow m1 A0 for 'their $25 \times 40 \times 32$' $\div 2$.
16 (times)	A1	FT provided M1 m1 awarded
	(5)	
18.*(a)(i) $\dfrac{5}{12}$	B1	ISW
18.(a)(ii) $\dfrac{18072}{12} \times 7$ (£)10 542	M1 A1	FT 'their 2 + 3 + 7' from (a)(i) provided > 10
18.(b) $\dfrac{80}{32}$ (×100) or 2.5 (× 100) 250(%)	M1 A1	 Mark final answer If no marks, award SC1 for an answer of 150(%) (using a profit of £48)
	(5)	
19.*(a) $(650 \times 8 + 750 \times 7 + 850 \times 4 + 950 \times 11)$ $\qquad\qquad\qquad\qquad\qquad \div 30$ 810 (grams)	M1 m1 A1	(= 24300)
19.(b) Valid comment e.g. 'Her answer will be an underestimate.' 'She is using the lowest values so the mean will be too small'.	E1	Allow answers that state that the calculated mean will be smaller or indicate that the lowest values do not represent the groups, e.g. 'Her method will give a smaller mean.' 'Because these values do not represent the entire range.' 'Because she ignored the distribution in each interval.' 'Because she is using the minimum masses making at an unfair estimate.' Do not allow e.g. 'She has used the smallest value in each group.' 'Because these values are the lowest bounds.' 'Because it is not as accurate as the midpoints.' 'It is better to use the midpoints.'
	(4)	

20.*(a) Valid criticism e.g. 'There are no points above the line.' 'There should be some points above and below the line.' 'It does not follow the trend of the data.'	E1	Allow e.g. 'She has just joined the first point to the last.' 'It is not through the middle of the points.' 'It is not in between all the points.' Do not allow e.g. 'The line is in the wrong place.' 'It does not go through many points.'
20.(b) No indicated and valid comment e.g. 'Correlation does not imply causation.' or 'There could be another reason such as owning a dog for example would mean you took more exercise.'	E1	Allow e.g. 'There is no relationship between them, it is just a coincidence.' 'Owning a pet has nothing to do with going to the doctors.'
	(2)	
21.* $5000 \times 1.02^5 \times 1.013^4$ oe, si (£) 5813.11... or (£)5813 or (£)5813.10	M3 A1	Method for M3 or M2 may be seen in stages M2 for use of $\times 1.02^5$ or $\times 1.013^4$ oe Note: $5000 \times 1.02^5 = 5520.40\ldots$ and $5000 \times 1.013^4 = 5265.11\ldots$ M1 for use of $\times 1.02$ or $\times 1.013$ oe Note: 5000×1.02 (= 5100) or 5000×1.013 (= 5065) CAO A1 only from fully correct working.
	(4)	

22.*(a) 7 000 000 indicated	B1	
22.(b) $\frac{1}{2} \times (79 + 62) \times 30$ oe	B1	(= 2115)
$\pi(30 \div 2)^2$	B1	(= 706.858...)
$(½ \times (79 + 62) \times 30 - \pi \times 15^2) \div (\pi \times 15^2)$ OR $½ \times (79 + 62) \times 30 \div (\pi \times 15^2) - 1$	M2	dep on at least B1 awarded; FT 'their area of circle' or 'their area of trapezium' for M2 or M1 (= (2115 − 225π) ÷ 225π) Award M1 for one of the following: • $½ \times (79 + 62) \times 30 - \pi \times 15^2$. (= 1408.1..) • $½ \times (79 + 62) \times 30 \div (\pi \times 15^2)$. (= 2.99..) • (706.9 : 2115 =) 1 : 2.9(9…) or 1 : 3
$(k =)$ 1.9(921...) si	A1	CAO
$(k =)$ 2	B1	FT 'their 1.99...' rounded to 1 sig fig, providing at least M1 previously awarded, and a ratio obtained (not for rounding an area). An answer of $(k =)$ 2 implies the previous A1 if no incorrect working seen e.g. 706.9 : 1408.1 = 1 : 2 *Note: unsupported answers of 1:2 or k = 2 or are awarded zero marks*
	(7)	
23.*(a) $5x - 2x = 6 - 4$ or $3x = 2$ oe	B1	
$(x =) \frac{2}{3}$ oe, ISW	B1	Allow 0.67 or 0.666 but not 0.66 FT from $ax = 2$, $a \neq 1$ or $3x = b$ accept $\frac{2}{a}$ or $\frac{b}{3}$ but if on FT either simplifies to an integer the answer must be given as an integer. Correct answer implies first B1 unless incorrect working seen. **Maximum of 1 mark if not fully correct**
23.(b) $4x > 17 + 3$ oe	M1	
$x > 5$	A1	Mark final answer; no marks for use of "=", unless finally replaced to give $x > 5$ then award M1 A1.
23.(c)		No marks for T&I; no marks for an unsupported answer.
Method to eliminate an unknown e.g. equal coefficients and subtraction or rearranges one equation and substitutes into the other	M1	Allow one error in one term, not in the equated coefficients if appropriate
Finds one unknown	A1	CAO; $x = 2$, $y = -3$
Finds the other unknown	A1	FT 'their x' or 'their y' used in one of their equations
	(7)	

24.*		
Uses *EC* = 6 oe correctly in a trigonometric statement	S1	
(BC=) $\dfrac{6}{\cos 35}$ or $\dfrac{6}{\sin (90-35)}$	M2	Allow equivalent complete methods for M2 or M1 M1 for $\cos 35 = \dfrac{6}{BC}$ or $\sin (90-35) = \dfrac{6}{BC}$ oe
(*BC* =) 7.3(246...) si	A1	May be implied by a correct expression for the perimeter e.g. $\dfrac{24}{cos35}$ or $\dfrac{24}{sin55}$ oe
(perimeter =) 4 × 7.3(246...) si	M1	FT 'their derived *BC*' providing S1 previously awarded and their BC > 6
(perimeter =) 29.2(...) or 29.3 or 29 (cm)	A1	FT
	(6)	