GCSE MARKING SCHEME

AUTUMN 2023

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

INTRODUCTION

This marking scheme was used by WJEC for the 2023 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 2023 MARK SCHEME

Component 1: Foundation Tier	Mark	Comment
1.(a)(i) 800	B1	
1.(a)(ii) 19	B1	
1.(a)(iii) 30 ÷ 5 × 2 or $\frac{2}{5}$ × 30 or equivalent 12	M1 A1	May be seen in stages. ISW
1.(a)(iv) 70 ÷ 10 × 3 or 0·3 × 70 or equivalent 21	M1 A1	May be seen in stages. ISW
1.(a)(v) 13·83	B1	
1.(b) 0·08	B1	
1.(c) 5	B1	
	(9)	
2.(a) (The number is) 16 (The factors of this number are) 1, 2, 4, 8, 16	B1 B1	Answer lines take precedence. Must be a list, not products. If no marks award SC1 for correctly listing all of the factors of two non-prime numbers between 13 and 19: • 14 - 1, 2, 7, 14 • 15 - 1, 3, 5, 15 • 18 - 1, 2, 3, 6, 9, 18
2.(b) 14, 28, 42	B1	May be in any order.
2.(c) 23, 24, (25), 26, 27	B2	B1 for 3 values out of 23, 24, 26, 27. Penalise –1 for each further value.
	(5)	
3. 40(%)	B2	B1 for $\frac{2}{5}$ or $\frac{8}{20}$ oe ISW
	(2)	

4.(a) (Key: ● represents) 4 (students). Chicken 10 Ham 12 Cheese ◔ Tuna ● ◔	B1 B2	 FT 'their key' if possible for B2 or B1. B1 for any 2 or 3 correct. Can be unshaded and in any orientation.
4.(b) Ham	B1	FT from (a) provided not contradicted by table or pictogram
	(4)	
5.(a) 4 and 16	B2	Answer space takes precedence. Allow 2^2 and 4^2. B1 for one of the following: • a final answer of two numbers with a difference of 12, one of which is square, • a final answer of two square numbers, • listing at least three square numbers in their working lines.
5.(b) No, AND correct reason stated e.g. • 'two odd numbers add to give an even number (and 21 is odd)' • 'you can only add an odd number and an even number (to get 21)' • 'even + odd = odd (and 21 is odd)'	E1	If a box is not ticked, 'No' may be implied by their reason. Accept equivalent reasons e.g. One number would always have to be even. Do not allow 'no two odd numbers add to give 21' unless accompanied with at least two examples of two odd numbers adding to make an even number. E0 if candidates simply list pairs of numbers which add to 21 unless they are identified as odd or even. E0 if incorrect box is ticked, even if the correct reason is given.
5.(c) 0·3, 0·302, 0·35, 0·8, 3	B1	
	(4)	

6.(a)(i) Jamal selected and all 3 correct totals seen as tallies or frequencies. Candidate / Tally / Frequency Ashton / 𝍸 𝍸 || / 7 Jamal / 𝍸 𝍸 𝍸 𝍸 / 10 Oliver / 𝍸 𝍸 ||| / 8	B2	If both tallies and frequencies are given, they must agree for B2 and B1. Frequencies may not be seen in the table. B1 for one of the following: • three frequencies or tallies completed with one or two correct and a correct FT decision • three correct frequencies or tallies and an incorrect decision or no decision. • Jamal, with no incorrect working seen. If no marks, award SC1 for a single slip in converting tallies to frequencies with Jamal selected.
6.(a)(ii) $\frac{8}{25}$ (× 100) 32 (%)	M1 A1	FT 'their frequency' for Oliver if unambiguously stated in (a)
6.(b) Any suitable explanation, e.g. • 'The boxes overlap' • 'I don't know which box to tick if I've had 2 injuries'	E1	
	(5)	
7.(a) 6 × 250 1500 (cm) 15 (m)	M1 A1 B1	Condone incorrect units at this stage. B1 implies M1 A1 provided not from incorrect work. FT 'their length' in cm if unambiguous
Alternative method *250 cm = 2·5 m* *6 × 2·5* *15 (m)*	*B1* *M1* *A1*	*FT 'their 2.5' from incorrect place value.*
7.(b) $\frac{4}{5}$	B2	B1 for one of the following: • $\frac{240}{300}$ oe • a fully simplified answer of $\frac{240}{\text{'their 240 + 60'}}$. • $\frac{1}{5}$ (working with tulips)
7. (c) 1:1 oe	B1	Must be integers
	(6)	

8. Calculations that allow comparison e.g. 250 ÷ 10 AND 300 ÷ 3, 25(p) OR 27(p) 25(p) AND 27(p) with 1000ml indicated	 M1 A1 A1	 If units are given, they must be correct for M1 A1 A1. Note: (see tables below)
Alternative method *250 ÷ 10 × 3 OR 81 ÷ 3 × 10* *75(p) OR 270(p)* *1000ml indicated*	 *M1* *A1* *A1*	 *Candidates may work in pounds or pence.* *If units are given, they must be correct for M1 A1*
	(3)	
9.(a) (x =) 7	B1	Mark final answer. Accepted embedded answer provided it is not later contradicted.
9.(b) – 48	B1	
9.(c) $23w - 6$	B2	Mark final answer. B1 for one of the following: • expanding the bracket correctly ($18w - 6$) • $23w + k$ where $k \neq$ -6 • $aw - 6$ where $a \neq 23$
9.(d) $8t$	B1	B0 for $t = 8t$
	(5)	
10.(a) 35	B1	
10.(b) 14	B1	Answers may be embedded.
	(2)	

Note (question 8):

	3000ml	100ml	1ml
1000 ml	£7.50	£0.25	£0.0025
300 ml	£8.10	£0.27	£0.0027

	ml per p	ml per £	p per ml	£ per ml
1000 ml	4	0.004	0.25	0.0025
300 ml	3.703…	0.003..	0.27	0.0027

11.(a) $5 \times 0.98 - 4.50$ OR $5 \times (0.98 - \frac{4.50}{5})$ (£) 0.4(0) OR 40 (p)	M2 A1	May be in £ or p but must be consistent. M1 for either: • 5×98p (= 490p) oe • $(0.98 - \frac{4.50}{5})$ (= £0.08) oe; Allow £0.40p but not 0.4(0)p
11.(b) (£)10 - 4 × (£)0.90 (= £6.40) (£)6.4(0) ÷ (£)1.25 oe 5 (cinnamon whirls)	M1 m1 A1	May be in £ or p but must be consistent. FT their 'derived £6.40'. Allow M1 for either: • sight of 1.25 × 5 (= 6.25) • at least two trials of 1.25 × n = 'their 6.4(0)' where $n > 1$. Provided no incorrect working seen. No marks awarded for an unsupported answer of 5.
Alternative method *4 × (£)0.9(0) + 5 × (£)1.25 (= £9.85) oe* *5 (cinnamon whirls)*	*M2* *A1*	*M1 for at least two trials of 4 × 0.9 + n × 1.25 where $n > 1$.*
	(6)	
12. $390 \times 2\frac{1}{3}$ or $2 \times 390 + \frac{390}{3}$ oe 910	M2 A1	May be seen in stages. M1 for one of the following: • 390 × 2·3 (= 897) • 390 × 2·2(0) (= 858) • 390 × 140 (= 54 600) CAO
	(3)	
13.(a) No, with a suitable reason e.g. • 'he needs 12 packs of water' • 'he has rounded down, not up' • 'he will only have 88 bottles' • 'he needs one extra (pack)' • 'he needs two extra bottles'	E1	Do not allow simply 'he won't have enough bottles'.
13.(b) Any suitable explanation e.g. • 'he should divide by 5, then multiply by 4' • 'he is working out 1/4 (not sharing in the ratio 4:1)'	E1	Do not accept simply 'he should divide by 5'. Allow E1 for candidates who show the correct calculation.
	(2)	
14.(a) 3, –1, –3	B2	B1 for any two correct
14.(b) Correct line drawn between (–2 ,5) and (2, –3)	B2	B1 for one of the following: • a correct line drawn but not over full domain. • 5 correct plots • 5 correct plots strict FT 'their table'
	(4)	

15. 0·42 + 0·3 + 0·18 = 0·9 AND $(1 - 0{\cdot}9) \times 100 = 10$ OR 42 + 30 + 18 = 90 AND 100 – 90 = 10	B2	Accept '0.1 is missing' in place of addition to 0·9. B1 for one of the following: • 'the probabilities don't add up to 1' • 0·42 + 0·3 + 0·18 = 0·9 • '0·1 is missing' • 42 + 30 + 18 = 90
	(2)	
16.(a) 3:2	B2	B1 for any simplified version of 72:48 e.g. 36:24. If no marks, allow B1 for 2:3
16.(b) $\frac{48}{72 + 48}$ (× 100) OR $\frac{2}{2 + 3}$ (× 100) 40(%)	M1 A2	FT 'their ratio' from (a) of equivalent difficulty A1 for appropriate sight of $\frac{8}{20}$ or $\frac{4}{10}$ or $\frac{2}{5}$. Note: If FT 'their ratio' from (a) accept their percentage rounded or truncated for A2.
	(5)	
17.(a) A correct method which would lead to 12% of 750 e.g. 75 + 7·5 + 7·5 oe (£)90(.00) ISW	M1 A1	May be seen in stages.
17.(b) $\frac{7}{15} - \frac{2}{5}$ OR for sight of $\frac{6}{15}$ $\frac{1}{15}$ oe	B1 B2	B0 for unsupported $\frac{5}{10}$ B1 for $\frac{7}{15} - \frac{6}{15}$ oe
	(5)	
18. (Height at 11:00 =) 8 (cm) (Volume at 11:00 =) 150 × 8 (÷ 1000) 1·2 litres	B2 M1 A2	B1 for one of the following: • $20 - 4 \times (20 - 17)$ • $17 - 3 \times (20 - 17)$ • sight of (20,) 17, 14, 11, … FT 'their derived 8' provided at least B1 previously awarded. A1 for 1200 (cm^3)
Alternative method for the final 3 marks *(Volume at 11:00 =)* $150 \times 20 \times \frac{8}{20}$ *1·2 litres*	*M1* *A2*	*FT 'their derived 8' proving at least B1 previously awarded.* *A1 for 1200 (cm^3)*
	(5)	

19. $\frac{90}{120}$ oe ISW	B2	May be seen on the diagram. B1 for one of the following: • sight of 90 • sight of 20+30+40 • $\frac{'their\ 20+30+40'}{120}$ with at most one error in a value or the addition.
	(2)	
20. An explanation using corresponding, alternate or allied/co-interior angles where the relevant angles have been identified e.g. • $A\hat{E}F = 80°$ *AND* 'allied/co-interior angles sum to 180°' • $A\hat{E}G = 100°$ *AND* 'corresponding angles are equal' • $B\hat{E}F = 100°$ AND 'alternate angles are equal'	E2	Angles may be marked on the diagram. E1 for correctly identifying an angle of 80 or 100, accompanied with a basic angle rule e.g. • 'vertically opposite angles are equal' • 'angles on a straight line sum to 180'. No marks for simply identified angles of 80 or 100 degrees on the diagram.
	(2)	
21.(a) Valid reason e.g. • 'for a fair comparison' • 'to do the survey the same way' • 'so that the leaves are measured consistently'	E1	Do not allow 'to measure accurately'.
21.(b)(i) Asif, with a valid reason e.g. • 'Asif's results have correlation (in his graph)' • 'There is no correlation between (length and width in) David's graph'	E1	Allow: • 'there is a trend in Asif's results' • 'there is not a trend in David's results' • 'Asif's leaves follow a pattern (but David's don't)' E0 for: • 'his results are closer together' • 'his graph was more consistent' • 'his results are similar/the same'
21.(b)(ii) Suitable line of best fit drawn	B1	Do not accept: • a line clearly just joining the first point to the last point. • a 'corner to corner' line
21.(b)(iii) Width in the range 7 to 9 cm	B1	Strict FT from their positive line of best fit. Tolerance +/- 0.1.
	(4)	

22.* $2 \times 330 \div (1 + 2 + 7)$ 66 (ml)	M1 A1	May be seen in stages. Full method required.
	(2)	
23.* (Area of shape =) $2 \times \pi \times 6^2$ OR $4 \times \frac{\pi \times 6^2}{2}$ $+ 12^2$ $= 144 + 72\pi$ (cm^2)	M2 m1 A1	M1 for $\pi \times 6^2$ or $\frac{\pi \times 6^2}{2}$ FT from M2 or M1. CAO
	(4)	
24.* $700 \times 7{\cdot}5$ 5250 (g) or 5·25 kg No indicated or clearly implied	M1 A1 A1	 CAO FT 'their $700 \times 7{\cdot}5$'.
Alternative method 1 $\frac{5 \times 1000}{700}$ *7·1(… cm^3)* *No indicated or clearly implied*	*M1* *A1* *A1*	 *CAO* *FT 'their $\frac{5 \times 1000}{700}$'*
Alternative method 2 $\frac{5 \times 1000}{7{\cdot}5}$ *666·6(… cm^3) or 666·7 (cm^3)* *No indicated or clearly implied*	*M1* *A1* *A1*	 *CAO* *FT 'their $\frac{5 \times 1000}{7{\cdot}5}$'*
	(3)	
25. For a correct method that produces 2 prime factors from the set {2, 2, 3, 5} before the 2nd error. 2, 2, 3, 5 $2^2 \times 3 \times 5$	M1 A1 B1	Must be a method that involves only division. CAO for sight of the four correct factors (Ignore 1s) FT 'their primes' provided at least one index form used with at least a square. Do not FT non-primes. Allow $(2^2)(3)(5)$ and $2^2.3.5$ Do not allow $2^2,3,5$. Inclusion of 1 as a factor gets B0.
	(3)	

26.* $2x + 3 = 8$ $x = 2{\cdot}5$ $7 \times 2.5 - 5y = 10$ oe $y = 1{\cdot}5$	 M1 A1 M2 A1	 FT 'their stated/derived 2·5' M1 for $7x - 5y = 10$
	(5)	
27.* $21\sqrt{2}$	 B1	
	(1)	
28.* $3xy(y + 2x)$	 B3	Mark final answer. B2 for any one of the following: • A correct answer seen then spoiled. • $3x(y^2 + 2xy)$ • $3y(xy + 2x^2)$ • $xy(3y + 6x)$ • $3xy(y + mx)$ where $m \neq 0$ or $m \neq 2$ • $3xy(ny + 2x)$ where $n \neq 1$ or $n \neq 0$ B1 for any one of the following: • $3(xy^2 + 2x^2y)$ • $x(3y^2 + 6xy)$ • $y(3xy + 6x^2)$ • $3xy(y + \ldots)$ • $3xy(\ldots + 2x)$
	(3)	
29.* $4(\cdot0) \times 10^3$	 B2	B1 for: • sight of 4000 • $\frac{9{\cdot}6 \times 10^8}{2{\cdot}4 \times 10^5}$ oe • $4(\cdot0) \times 10^n$ where $n > 0$. • $a \times 10^3$ where $1 < a < 10$
	(2)	
30.*(a) 0·6 on the 'Does not go on a train' branch Use of $0{\cdot}4 \times$ …….. = 0·28 OR $0{\cdot}28 \div 0{\cdot}4$ P(Goes to the theatre) = 0.7 0·7, 0·3, 0·7 and 0·3 correctly placed	 B1 M1 A1 A1	 Allow M1A1 if 0·7 seen on one of the 'Goes to the theatre' branches. FT 'their 0.7' only if M1 awarded. (0·28, 0·72, 0·28, 0·72 is M0A0A0)
30. (b) $0{\cdot}6 \times 0{\cdot}3$ 0.18	 M1 A1	 FT their tree provided both values between 0 and 1.
	(6)	

31.* Correctly rewriting the equations in the form $y = mx + c$ $y = 4x + 3$ AND $y = 4x - 6{\cdot}5$ (so lines parallel)	B3	B2 for: • one correct equation and a correct but incomplete rearrangement of the other seen e.g. $y = 4x - 6{\cdot}5$ and $3y = 12x + 9$ • both in the form $y = 4x + c$ with an error in one constant term, provided constants aren't equal. e.g $y = 4x - 6{\cdot}5$ and $y = 4x + 9$ B1 for: • one correct equation $y = 4x - 6{\cdot}5$ or $y = 4x + 3$ • two equations of the form $y = 4x + ...$ with errors in both constant terms or no constant terms. *Allow all marks for equivalent complete methods* *e.g.* $6y - 24x = 18$ *AND* $6y - 24x = -39$ *or* $(3y = 12x + 9$ *AND* $3y = 12x - 19{\cdot}5)$ *and a clear statement that the two equations are of the same form and the only difference is the constant, so they are parallel.*
	(3)	

<table>
<tr><td>32*.

$2 \times \frac{2}{8} \times \frac{9}{3}$ or $2 \div 4 \times 3$ oe

1·5 hours oe</td><td>

M2

A1</td><td>May be seen in stages.
Candidates might work in minutes.
M1 for one step, e.g.
• 2 ÷ 4 (0·5 hours)
• 2 × 3 (6 hours) oe

CAO</td></tr>
<tr><td><u>Alternative method 1</u>

<table><tr><th>Pumps</th><th>Tanks</th><th>Time</th></tr><tr><td>9</td><td>8</td><td>2</td></tr><tr><td>÷ 3</td><td></td><td>× 3</td></tr><tr><td>3</td><td>8</td><td>6</td></tr><tr><td></td><td>÷ 4</td><td>÷ 4</td></tr><tr><td>3</td><td>2</td><td>1·5</td></tr></table></td><td>

M1

M1
A1</td><td>

Method to find tanks and time for 3 pumps.

Method to find time for 2 tanks. FT.
CAO</td></tr>
<tr><td><u>Alternative method 2</u>

<table><tr><th>Pumps</th><th>Tanks</th><th>Time</th></tr><tr><td>9</td><td>8</td><td>2</td></tr><tr><td>÷ 9</td><td></td><td>× 9</td></tr><tr><td>1</td><td>8</td><td>18</td></tr><tr><td></td><td>÷ 4</td><td>÷ 4</td></tr><tr><td>1</td><td>2</td><td>4·5</td></tr><tr><td>× 3</td><td></td><td>÷ 3</td></tr><tr><td>3</td><td>2</td><td>1·5</td></tr></table></td><td>

M1

M1
A1</td><td>

Method to find tanks and time for 1 pump.

Method to find tanks and time for 3 pumps. FT.
CAO</td></tr>
<tr><td><u>Alternative method 3</u>

<table><tr><th>Pumps</th><th>Tanks</th><th>Time</th></tr><tr><td>9</td><td>8</td><td>2</td></tr><tr><td></td><td>÷ 8</td><td>÷ 8</td></tr><tr><td>9</td><td>1</td><td>¼</td></tr><tr><td>÷ 3</td><td></td><td>× 3</td></tr><tr><td>3</td><td>1</td><td>¾</td></tr><tr><td></td><td>× 2</td><td>× 2</td></tr><tr><td>3</td><td>2</td><td>1·5</td></tr></table></td><td>

M1

M1
A1</td><td>

Method to find pumps and time for 1 tank.

Method to find pumps and time for 2 tanks. FT.
CAO</td></tr>
<tr><td></td><td>(3)</td><td></td></tr>
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