



## **GCSE MARKING SCHEME**

**SUMMER 2017** 

GCSE (NEW) MATHEMATICS - COMPONENT 2 (FOUNDATION) C300U20-1

## INTRODUCTION

This marking scheme was used by WJEC for the 2017 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 Summer 2017		
GCSE (9-1) Mathematics	Mark	Comments
Component 2: Foundation Tier		
1. (a) (£) 2.30 and (£)17.9(0)	B1 B1	Allow 230(p) written outside the grid only.
(£) 10.47 (£) 30.67	B1	FT addition of their values, but do not accept
(2) 30.07		errors in place value.
1. (b) (i) explains that by spending an additional	E1	e.g. "If he spends £3 extra he will save £5". "He
£3 he will save £5.		has spent an extra £3.49 but his shopping is
		reduced by £5" "his shopping is £1.51 cheaper
		than if he had not spent the extra £3.49" or
(ii) (0)25.40	B1	equivalent
(ii) (£)35.49	Ы	
1. (c) 6 x 8.95	M1	Or equivalent
$= (\pounds) 53.7(0)$	A1	If no marks awarded, then
		SC1 for (£)71.6(0) (= 8 x 8.95)
	(7)	
	<b>F</b> 4	
2. (a) Explaining that the common denominator is incorrect	E1	
e.g. '3 is not a factor of 20'		
'20 doesn't divide by 3'		
'all the denominators do not go into 20'		
2. (b) 40	B1	CAO
	(0)	
	(2)	
3. (a) Drawing of a parallelogram	B1	Can be a rhombus. Intention to have opposite
		sides parallel and no right angles must be
		clear.
3. (b) (i) ACB indicated	B1	
(ii) NM indicated (iii) isosceles indicated	B1 B1	Any indication accepted (circle, tick etc.)
	ы	
	(4)	
	( )	
4. (a) 4/5 or 0.8 or 80%	B1	
(h) 2/5  or  0.4  or  40%		If no marke in (a) and (b):
4. (b) 2/5 or 0.4 or 40%	B1	If no marks in (a) and (b): Award SC1 if BOTH are 'correct' but using
		incorrect notation e.g.4:5 AND 2:5
		or 4 in 5 AND 2 in 5.
	(2)	
5. (a) x = 9	B1	Allow embedded answers
5. (b) y = 20	B1	Allow embedded answers
5. (c) 8z = 27 – 13 or 8z = 14	B1	
z = 1.75 or $z = 14/8$ or equivalent	B1	FT from one error.
		If 'their 14/8' can simplify to a whole number,
		then a whole number must be seen for 2 <sup>nd</sup> B1. Allow embedded answers
	(4)	

Eduqas Summer 2017 GCSE (9-1) Mathematics Component 2: Foundation Tier	Mark	Comments
<ul> <li>6. 'Greater' circled AND valid evidence</li> <li>e.g. 'the perimeter has increased from</li> <li>36cm to 46cm' or equivalent, 'two extra</li> <li>5cm lengths added' 'two extra sides'</li> </ul>	E2	Award E1 for 'greater' circled and an incomplete reason given OR sight of 36(cm) and 46(cm).
7. (a) 3p	B1	
7. (b) 8a + 2b	B2	B1 for sight of either 8a or 2b. Mark final answer. Must be an expression to gain the B2.
7. (c) 6c	B1	
7. (d) 3a + 18	B1 (5)	Mark final answer.
8. 0.6(00), (0.615), (0.65(0)), 0.667 60% 0.615 0.65 $\frac{2}{3}$ or equivalent	M1 A1	For converting all numbers into a form for comparison. Accept sight of 0.66 or better for $^{2}/_{3}$ . Allow M1 A1 for a correct unsupported answer.
	(2)	SC1 correct order, but reversed.
9. (a) Explanation. E.g. 'whole cubes need to fit into the box', 'can only fit 3 layers', '7 is an odd number so some space would be left' or 'he hasn't used the dimensions of the box'. '2 doesn't go into 7 exactly'	E1	
9. (b) Explanation. e.g. 'the answer is too big' or 'the number of cubes will be smaller' 'he has calculated too many'	E1	Do not accept 'his answer is incorrect'
9. (c) (number of cubes =) 4 x 5 x 3 = 60	M1 A1 (4)	Answer of '60' implies M1A1
10. For Team Beta: (160 x 4.60 = £)736 0.75 x 160 x 5.2(0) (= £624) 0.25 x 160 x 3 (= £120) Total income (£)744 Profit for Team Beta is (744 – 736 =) (£)8 Team Axis won, by £2	B1 M1 A1 B1 E1	Or equivalentOr equivalentFT (160 - 'their 120') × 3May be implied by later working.FT 'their 744' - 'their 736' provided at least B1or M1 awarded.FT difference between £10 and 'their £8',provided that the final B1 has been awarded.Final answer must have unit shown.Alternative method: Considering profit(Profit per toy sold for £4.60 is £5.20 - £4.60 =£)0.60 AND(Loss per toy sold for £3 is £4.60 - £3=£)1.60B10.75 x 160 X 0.60M10.25 x 160 x 1.60M1(£)72 and (£)64A1(Profit for Team Beta = £72 - £64 =£)8B1
<ul><li>11. (a) Explaining that there is no mode.</li><li>e.g. 'no number appears more than the others' 'there is more than one mode'</li></ul>	E1	Team Axis won, by $\pounds 2$ E1Allow explanations that consider the mode such as 'there are two 6s, 7s and 9s'.

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GCSE (9-1) Mathematics	Mark	Comments
Component 2: Foundation Tier	<b>D</b> 4	
11. (b) (range =) 6 (median =) 7	B1 B1	
11. (c) (i) 9	B1	
11. (c) (ii) explanation e.g. 'the median would be reduced'	E1 (5)	Allow calculation e.g. 'the median would become 6' or equivalent. FT 'their median' from (a) Do not allow 'it changes' or equivalent.
12. Calculates the total hours already used.	M1	
(tennis $1/12$ of $24 =$ ) 2 (hours) OR (working $3/8$ of $24 =$ ) 9 (hours)		
(Hours left) 24 – (8 + 2 + 9) =	m1	FT provided 2 hours or 9 hours correct. (Candidates MUST have made a convincing attempt at calculating 2 AND 9)
e.g. '5 hours is more than 2 so yes, Omar will have enough time' 'only adds to 21 (hours) so enough time' '21 is less than 24, so yes' '5 (hours left, Omar has) enough time'.	A1 (3)	CAO
13. Listing times(9:00), 9:20, 9:40 AND (9:00), 9:25, 9:50OR Listing multiples of 20 and 25 or prime factors of 20 and 25.	M1	Allow for sight of 20, 40, 60… AND 25, 50, 75, … OR sight of 2 x 2 x 5 AND 5 x 5.
Sight of 100 as the LCM or the number of minutes OR one or two lists with 10.40 appearing correctly in at least one list.	A1	
Time of 10:40 (a.m.)	A1	FT 'their 100' provided M1 awarded.
14. 240 ÷ 5 x 8 or equivalent	(3) M2	Award M1 for either 240 x 8 OR 240 ÷ 5
384(cm)	A1	(=1920) (=48)
		Accept embedded '384' e.g. '5/8 of 384 is 240'
	(2)	
15. (a) 1.25(m) = 125(cm) or 5.3(cm) = 0.053(m)	(3) B1	Seen or implied
125 ÷ 5.3 or 1.25 ÷ 0.053 or equivalent (=23.58) 23 (reams)	M1 A1	Allow M1 for 'their height' ÷ 5.3 with place value errors. CAO
(,,		Alternative build up method:Working with consistent units (cm or m) B1Attempts to work in multiples of 5.3 to at least125(cm)M123 (reams)A1
<ul> <li>15. (b) States or implies 'No', with a reason,</li> <li>e.g. No, he needed 14 reams.</li> <li>No, he should have rounded up.</li> <li>No, he hasn't got enough paper.</li> <li>No, 13 reams is only 6500 sheets.</li> <li>No, he is 30 sheets short.</li> </ul>	E1 (4)	

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GCSE (9-1) Mathematics Component 2: Foundation Tier	Mark	Comments
16. 4 black and 6 white	B2	B1 for attempt at diagram showing 10 squares or for black/white reversed or for showing equivalent fractions e.g. 4/10 and 6/10. OR B1 for black : white = 2n : 3n, where n>2 e.g. 6 black and 9 white.
17. (a) Statement that they need to divide by 5	(2) E1	Accept 'there are 5 parts not 4'
e.g. 'they should divide by 5 not 4' 'this is a ratio of 1:3 (not 1:4)'		
(b) 400 ÷ 5 AND 400 ÷ 5 x 4 or 400 – 400 ÷ 5	M1	Complete method for both shares.
80 and 320	A1	A0 if the answers are reversed.
	(3)	
<ul> <li>18. (a) explanation</li> <li>e.g. 'population has increased',</li> <li>'3(.2) times as many', 'just over 3 times as much', 'new population is 3.2 or (more than) 3 times the original population',</li> <li>'320% means that the population has more than tripled'.</li> </ul>	E1	
18. (b) 250000/40000 x 100 = 625 (%)	M1 A1	B1 for an answer with the digits 6 2 5.
19. 35÷40 (x 100)	(3) M1	Or equivalent full method in each case
19. 35÷40 (x 100) 31÷35 (x 100)	M1	Or equivalent full method in each case
87.5 (%) AND 88.5(7) (%) Or 0.875 AND 0.885(7)	A1	Accept rounded or truncated from correct working.
(Jane had better result in) test 2	E1	FT 'their two values' provided at least M1 awarded
		<u>Alternative method 1</u> – Equivalent fractions Common denominator 280 M1 248/280 OR 245/280 M1 248/280 AND 245/280 A1 (Jane had better result in) test 2 E1 <u>Alternative Method 2</u>
		35÷40 = 0.875 M1
		Test 1 0.875 x 35 M1 = 30.625/35 A1
	(4)	(Jane had better result in) test 2 E1
20. (a) 1, 4, 7 ISW	(4) B2	B1 for 2 correct terms in correct positions.
		B1 for –2, 1, 4.

Eduqas Summer 2017 GCSE (9-1) Mathematics Component 2: Foundation Tier	Mark	Comments
20. (b) 3n – 2 = 1000 (n=) 334 (whole number therefore yes) '1000 is the 334 <sup>th</sup> term' or equivalent	M1 A1	An answer of 334 implies the M1 mark. Alternative methods: <u>Trial and improvement</u> : B2 for 334. B1 for at least two correctly evaluated trials with $300 < n < 400$ . <u>Logic</u> : e.g. 1002 is a multiple of 3 B1 so 1002 is in the sequence $3n$ , so 1000 is in the sequence $3n - 2$ . B1
21. (a) v = 53 + (- 4) x 6 v = 29	(4) M1 A1	Accept embedded answers throughout Q21
21. (b) $20 = u + 2 \times 6$ u = 8	M1 A1	
21. (c) $v - u = at$ t = (v - u)/a	M1 A1 (6)	If no marks, award SC1 for an answer of t = (v + u)/a
22. (a) 2015 1000 × 0.92 (=920)	M1	Or equivalent full method. Allow in reversed order (× 0·97 × 0·92)
2016 1000 × 0·92 × 0·97 892.4(kg)	M1 A1	FT 'their 920' CAO
22. (b) (1000 - 892·4)/1000 (× 100) = 10·76 (%)	M1 A1	Or equivalent full method. FT 'their 892·4'
	(5)	
23. (a) Appropriate uniform scale on vertical	B1	
axis At least 2 correct points calculated Markers may find these useful: $\hline x  -2  -1  0  1  2  3$ y $1  3  5  7  9  11$ Fully correct graph of y = 2x + 5	B1 B1	Or use of y = mx + c with line starting from (0,5) with gradient 2
23. (b) Yes, the gradients are the same (3)	E1 (4)	Accept e.g. Yes, because 'same slope' Accept Yes, because m = 3 or 'both 3 <i>x</i> '.
24. (x =) 75 (°) (y =) 73 (°)	B1 B2	B1 for sight of 180 – 75 – 32, or 180 – 107, 180 – 75 – (180 – 100 - 48), or 180 – (360 – 100 – 48 – (180 – 75))
	(3)	

Eduqas Summer 2017 GCSE (9-1) Mathematics Component 2: Foundation Tier	Mark	Comments
25. $\pi \times r^2 = 24$ $r^2 = 24 \div \pi$ r = 2.76(3  cm)	M1 A1 A1	This implies M1 Accept r = 2.8(cm) or from correct working r = 3(cm)
	(3)	If no marks, award SC1 for an answer of 2.77 (cm)
26. 1.53 × 10 <sup>15</sup>	B1 (1)	
27.(a)(i) 062° (ii) 288°	B1 B1	Do not accept 62°
27.(b) 1 : 250 000	B2 (4)	Allow 1 : 250 000 cm B1 for 1 cm represents 2.5 km or 2500 m, OR 8cm represents 2 000 000cm, or equivalent, correct units <b>must</b> be given, or 8 : 2 000 000 or equivalent Allow B1 for an answer of 1 : 2.5 km B0 for 1 : 2.5
28.(a) 4 (days)	B2	<ul> <li>B1 for either a partial method, e.g.</li> <li>9 people take 2 days to mow the same length, or</li> <li>1 person takes 36 days (to mow twice as long), or</li> <li>3 people take 12 days (to mow twice as long), OR</li> <li>B1 for a full method, equivalent to 2 × 3 × 6 ÷</li> <li>9, with an error in evaluation</li> </ul>
28.(b) Assumption, e.g. 'all people work at the same rate', 'the grass verge that is twice as long is the same width as the other grass verge', 'same type of grass', 'weather is the same', 'same type of mower'	E1	The award of this mark depends on the award of B2 or B1 in (a) Allow as a misinterpretation, e.g. 'takes the same time cutting grass twice as long', 'the original 3 people will take 12 days to mow twice as long grass verge'
29.(a) 600 (people) and (£) 80	B1	
29.(b) Line of best fit	B1	Following trend with points above and below Do not allow a line through (0, 0)
29.(c)(i) Answer in the range (£)100 to (£)160	B1	FT 'their line of best fit'
29.(c)(ii) Reason, e.g. 'might be cold', 'depends on the weather', 'no data around 50 people to use', 'extending the line assumes the trend follows a straight line', 'no evidence to support less than 230 people', 'the line wouldn't pass through 0 people, £0'	E1	Allow, e.g. 'not as many people, so they may not stay long and not buy ice cream', ' if 50 people went, spend of approximately £100 (or more) would be unreasonable', 'not enough data'

Eduqas Summer 2017 GCSE (9-1) Mathematics Component 2: Foundation Tier							Mark	Comments
29.(d) Answer in the							B1	Do not accept in correct units, e.g. 0.87p
£0.65 to £1.20 or 65 with correct unit giv		120	р					Allow, e.g. £0.87p
Ū							(5)	
30. 2x <sup>2</sup> – 7x - 15							B2	B1 for $2x^2 - 10x + 3x - 15$ or B1 for FT correct collection of like terms provided at least 3 of the 4 terms are correct
							(2)	If no marks, award SC1 for answers of $2x^2 - 13x - 15$ or $2x^2 + 13x - 15$
							(2)	
31. Diagram or I the possible		•		all			M2	M1 for identifying 11, 22, 33, 44, 55. M1 for identifying that there are 30 possible
e.g.		1	2	3	4	5		outcomes.
e.g.	1	11	12	13	14	15		
	2	21	22	23	24	25		
	3 4	31 41	32 42	<b>33</b> 43	34 <b>44</b>	34 45		
	4	51	42 52	43 53	<b>44</b> 54	40 55		
	6	61	62	63	64	65		
= <sup>5</sup> / <sub>30</sub> (= <sup>1</sup> / <sub>6</sub> )							A1	CAO
								<u>Alternative MS</u> : Probability of both landing on the same particular number = $\frac{1}{5} \times \frac{1}{6}$ M1 Probability of both landing on any same number = $5 \times \frac{1}{5} \times \frac{1}{6}$ M1 = $\frac{5}{30} (= \frac{1}{6})$ A1
							(3)	

Eduqas Summer 2017		
GCSE (9-1) Mathematics Component 2: Foundation Tier	Mark	Comments
32.(a) 27 ÷ 1⅔ or equivalent full method	B2	Allow $1\frac{2}{3} = 1.66$ or $1.67$ for B2, but not $1\frac{2}{3} = 1.6$ Award B2 for sight of 4.5 m/s B1 for 27 ÷ 1 hour 40 minutes or 27 ÷ 100 Allow B1 for 27 ÷ 1.4(0) or 27 ÷ 1.6
16.2 (km per hour) <b>AND</b> states or implies target not achieved	B1	CAO, must be exactly 16.2 (km per hour) from sight of 27 $\div$ 1 <sup>2</sup> / <sub>3</sub>
		Unsupported 16.2 (km per hour) <b>AND</b> states or implies target not achieved is awarded B2 only (as answer may have been rounded to 16.2 km per hour from incorrect use of time)
		If no marks, allow SC1 for the appropriate interpretation of 27 $\div$ 'their time given in hours' correctly evaluated, allowing $\frac{1}{3}$ hour written as 0.3
		Alternatives:
		(20 km/h means)30 km in $1\frac{1}{2}$ hoursM1Attempts $14(:)20 + 1\frac{1}{2}$ m1(Finish time would be) $15(:)50$ <b>AND</b> (Didn't finish until 16:00 so) states or impliestarget not metA1
		OR
		(Time would be)60 × 27/20M181(minutes) or 1 hour 21 minutesA1(Rosa would needed to have finished by14:20 + 1 hr 21 minutes15(:)41 AND statesor implies target not met (as she finished at16:00)B1
		OR
		(Distance would be) $20 \times 1\frac{2}{3}$ M1 $33\frac{1}{3}$ (km) or $33.33($ km)       A1         (A0 for $33.3(km)$ )       (Rosa cycled) less than $33\frac{1}{3}$ (km) (or $33.33$ km)       AND states or implies target not         met       B1         (Use of $20 \times 1\frac{2}{3}$ as $20 \times 1.6$ is awarded M1 only)
32.(b) Impact statement, e.g. 'meets target', 'beats target' <b>AND</b>	E2	For E2 FT use of 'their time in hours' – 25 minutes used correctly <b>with</b> appropriate impact statement
sight of (27 ÷ 1.25 ) 21.6 (km per hour)		E1 for sight of 21.6 (km per hour)
		If no marks, SC1 for FT attempt 27 $\div$ 'their time – 25 minutes written incorrectly' <b>with</b> appropriate impact statement, e.g. time used in (a) is 1.4, uses 1.4 – 25 minutes in calculating average speed '27 $\div$ 1.15 = 23.47 so meets target'
	(5)	
	<u> </u>	

Eduqas Summer 2017 GCSE (9-1) Mathematics Component 2: Foundation Tier	Mark	Comments
33. Mid-points 2, 6, 10, 14, 18	B1	
2×2+6×7+10×10+14×8+18×3 (=312)	M1	FT 'their midpoints' provided these are at the bounds or within the groups (4 + 42 + 100 + 112 + 54 = 312)
÷ 30	m1	
10.4(mm)	A1	
	(4)	

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