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# **GCSE MARKING SCHEME**

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**SUMMER 2017**

**GCSE (NEW)  
MATHEMATICS - COMPONENT 1 (FOUNDATION)  
C300U10-1**

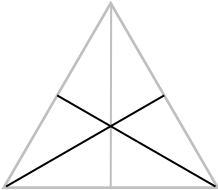
## **INTRODUCTION**

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 Component 1: Foundation Tier					Mark	Comment
1.					B3	B1 for each correct column  If no marks then B1 for 2 correct rows
Words	1	2	8	9		
Prime		✓				
Odd	✓			✓		
Even		✓	✓			
Square	✓			✓		
Cube	✓		✓			
					(3)	
2.					B1	Do not accept “thirty-one” for “three one”; do not accept dot for point
(a) sixty seven point three one					B1	Accept smaller than or equivalent for less than.
(is) less than seven hundred						Accept equivalent answers for both marks eg seven hundred is more than sixty seven point three one
						SC1 for eg 700 is greater than 67.31
(b) 8000 – 500 or equivalent					M1	
7500					A1	
					(4)	
3.					B1	
(a) 8						
(b) Rock					B1	Do not accept 26
(c) 60					B1	FT 7.5 × ‘their (a)’ provided the answer is an integer
						If they state 26, 20 and 14 with at most one error, then B0 for their total for (c) but FT for their difference in part (d) and their heights in (e)
(d) 12					B1	FT ‘their 26’ – ‘their 14’ if consistent with their key or if consistent with their answer to part (c) provided the answer is an integer

Eduqas Summer 2017 GCSE (9-1) Mathematics Component 1: Foundation Tier	Mark	Comment
(e) Labels on both axes  Uniform scale on vertical axis  All bars of equal width correct	B1  B1  B1	Horizontal axis labels may be on bars; allow eg 'students' for vertical axis  FT 'their 8' for the heights provided heights are integers; otherwise, if no key, allow heights consistent with parts(c) and part (d) Bars must have correct heights (26, 20, 14), allow inconsistent-width gaps or no gaps FT their scale if possible If FT and heights are odd, allow e.g. a height of 13 to be drawn halfway between a scale marked at 12 and 14 etc even if not on gridlines
(7)		
4. (a) Correct lines drawn	B1	
(b) Correct explanation eg 'It only looks the same when upside down' or 'It has order 2'	B1	Allow eg 'because of the shading'
(2)		
5. (a) ( $a =$ ) $56^\circ$  (b) ( $b =$ ) $360 - (210 + 90)$ or equivalent  ( $b =$ ) $60^\circ$	B1  M1  A1	Intention to calculate $360 - (210+90)$  Implies M1
(3)		
6. (a) 5.9 (b) 400	B1 B1	
(c) $40 \times 100$ or $40 \times 130$ or $40 \times 150$ or $38 \times 100$ or $40 \times 132$  4000 or 5200 or 6000 or 3800 or 5280 (grams)  4 or 5.2 or 6 or 3.8 or 5.28 (kg)	M1  A1  B1	Allow any reasonable product of figures with at least one correctly rounded; accept values rounded to the nearest 10, 50, 100  FT If M0 A0 then allow SC1 for eg 5000 g from 5016 seen or implied; accept any correct rounding of 5016  FT 'their derived grams' from a product of values
(5)		

<p style="text-align: center;"><b>Eduqas Summer 2017 GCSE (9-1) Mathematics Component 1: Foundation Tier</b></p>	<p style="text-align: center;"><b>Mark</b></p>	<p style="text-align: center;"><b>Comment</b></p>																																																								
<p>7. (a) <math>30.50 \div 5</math> or equivalent  (£)6.1(0)</p>	<p>M1  A1</p>	<p>Implies M1  Award M1 for embedded answer <math>5 \times 6.1(0) = 30.50</math></p>																																																								
<p>(b) <math>30.50 \times 10</math> or <math>50 \times 6.1(0)</math>  (£)305(.00)</p>	<p>M1  A1  (4)</p>	<p>Accept equivalent full calculations  FT 'their 6.1(0)'</p>																																																								
<p>8.(a)</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>50p</th> <th>20p</th> <th>10p</th> <th>5p</th> </tr> </thead> <tbody> <tr><td>1</td><td></td><td></td><td></td></tr> <tr><td></td><td>2</td><td>1</td><td></td></tr> <tr><td></td><td>2</td><td></td><td>2</td></tr> <tr><td></td><td>1</td><td>3</td><td></td></tr> <tr><td></td><td>1</td><td>2</td><td>2</td></tr> <tr><td></td><td>1</td><td>1</td><td>4</td></tr> <tr><td></td><td>1</td><td></td><td>6</td></tr> <tr><td></td><td></td><td>5</td><td></td></tr> <tr><td></td><td></td><td>4</td><td>2</td></tr> <tr><td></td><td></td><td>3</td><td>4</td></tr> <tr><td></td><td></td><td>2</td><td>6</td></tr> <tr><td></td><td></td><td>1</td><td>8</td></tr> <tr><td></td><td></td><td></td><td>10</td></tr> </tbody> </table>	50p	20p	10p	5p	1					2	1			2		2		1	3			1	2	2		1	1	4		1		6			5				4	2			3	4			2	6			1	8				10	<p>B2</p>	<p>B1 for any 3 correct rows</p>
50p	20p	10p	5p																																																							
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<p>(b)(i) Appropriate strategy e.g. attempting to work out the total amount taken</p> $\left( \frac{10}{2} + \frac{15}{5} + \frac{31}{10} + \frac{20}{20} \right)$ or $50 \times 10 + 20 \times 15 + 10 \times 31 + 5 \times 20$ or (£)5 + (£)3 + (£)3.1(0) + (£)1 (= (£)12.10) <p>£12.10 <math>\div</math> 0.5(0) or 1210 <math>\div</math> 50 or equivalent</p> <p>24</p>	<p>S1  M1  M1  A1</p>	<p>May be seen in stages.</p> <p>FT 'their 12.10' in £ or p but units must be consistent</p> <p>CAO <u>Alternative Method</u> Appropriate strategy eg working with multiples of 50p or attempting to work out the subtotal amount taken for each type of coin S1 Working out the number of drinks bought using the 50ps and at least one of the other coins seen or implied or for using any two of the other coins eg 10 and 7 or 10 and 6 or 10 and 2 M1 Summing 'their numbers of drinks' found from all the coins eg 10 + 7 + 5 + 2 or 10 + 7 + 1 + 4 + 2 or 10 + 6 + 6 + 2 M1</p> <p>24 CAO A1</p>																																																								

<b>Eduqas Summer 2017 GCSE (9-1) Mathematics Component 1: Foundation Tier</b>	<b>Mark</b>	<b>Comment</b>															
Any valid assumption stated e.g. 'The fewest number of people possible overpaid' or 'Only one person overpaid' or 'The machine always dispensed a drink when money was inserted' 'The machine broke down after 10p had been inserted'	E1	Allow eg 'Someone paid more than 50p for a drink.' Or 'Someone paid with three 20p coins'															
(b)(ii) Any valid impact based on their stated assumption e.g. 'The number of drinks sold may be lower'	E1																
	(8)																
9. (a) <table border="1" data-bbox="256 680 754 954" style="margin-left: 20px;"> <thead> <tr> <th></th> <th>Calculation</th> <th>Answer</th> </tr> </thead> <tbody> <tr> <td>A</td> <td><math>4 \times 9</math></td> <td>36</td> </tr> <tr> <td>B</td> <td><math>\frac{3}{4}</math> of 8</td> <td>6</td> </tr> <tr> <td>C</td> <td><math>-2 \times -12</math></td> <td>24</td> </tr> <tr> <td>D</td> <td><math>2^3 + 1^2</math></td> <td>9</td> </tr> </tbody> </table>		Calculation	Answer	A	$4 \times 9$	36	B	$\frac{3}{4}$ of 8	6	C	$-2 \times -12$	24	D	$2^3 + 1^2$	9	B3	B2 for any 3 correct B1 for any 2 correct
	Calculation	Answer															
A	$4 \times 9$	36															
B	$\frac{3}{4}$ of 8	6															
C	$-2 \times -12$	24															
D	$2^3 + 1^2$	9															
(b) Valid relationship with $A = 36$ and $B = 6$ e.g. 'A is 6 times B' or ' $A = B + 30$ ' or 'A is B squared' or '36 is 6 squared'	B1	FT 'their A' and 'their B'; do not allow eg $6 < 36$ ; could be in words  Must be a relationship between them not just something they have in common (such as being even etc)															
	(4)																
10. (a) (i) -10	B1																
(ii) $12\frac{1}{2}$ or 12.5	B1																
(iii) 13	B1																
(b) (i) 'It must be even' circled with supporting working or statement eg stating 'The values are all in the two times table'	B1	Allow at least 2 trials with a mix of odd an even values of $n$ Accept $2(n+1)$ as supporting working															
(ii) $2(n+1)$ ISW	B1	or equivalent															
	(5)																
11. (a) (1, 2)	B1																
(b) Line AB (measured as) 5 cm seen or implied	B1	Allow $\pm 0.2$ cm															
$(5 \times 100) \div 4$ or equivalent	M1	FT ('their 5' $\times 100$ ) $\div 4$															
125 (litres)	A1	FT 'their 5' provided 'their 5' is not an integer multiple of 4															
	(4)																

<b>Eduqas Summer 2017 GCSE (9-1) Mathematics Component 1: Foundation Tier</b>	<b>Mark</b>	<b>Comment</b>
12. (a) (Bea's number is) four times (Sam's number)	B1	Accept equivalent descriptions; allow '4 times'
(b) Valid explanation e.g. 'Dividing by 2' or 'It is being halved' or 'Doubling would be $2n$ '	B1	Accept equivalent descriptions; accept a valid counter-example
(c) $n + 2$	B1	CAO
(d) (Sam's number is) 70 or ( $n =$ ) 70  35	B2  B1	B1 for $n - 7 = 63$ or $63 + 7$ or equivalent  FT 'their derived 70' $\div 2$
	(6)	
13. (a) Correctly evaluated trial(s) using the product(s) of a pair of numbers where one is 4 times the other and comparing to 100 eg stating $4 \times 16 = 64$ and $64 < 100$ or stating $5 \times 20 = 100$ or $100 \div 5 = 20$ as final answer or with final answer 5 or 20 or Trial(s) using the product(s) of factors of 100 and comparing/testing the factors to check if one is 4 times the other eg stating $50 \times 2$ and $2 \times 4 \neq 50$ or stating $5 \times 20$ and $5 \times 4 = 20$ or stating $100 \div 5 = 20$ and $20 \div 4 = 5$	M1	or for at least two calculations of the form $w \times 4w$ or for $w \times 4w = 100$  Allow eg a rectangle with 20 and 5 marked as dimensions but 20 given as the answer to imply M1
5 (cm)	A1	CAO; implies M1
(b) $3x$ (cm)	B2	B1 for $14x - 4x - 4x (= 6x)$ or for 'their $6x$ ' $\div 2$ or for a rectangle with the correct dimensions marked
	(4)	
14. $25 + 28 + 31 (= 84)$ or $25 + 28 + 31 + 34 (= 118)$ or $90 - 25 - 28 - 31 (= 6)$	M2  A1	May be in steps  M1 for 25 seen or for differences of 3 indicated or for $3n + 10$ seen  CAO; not from wrong working Pattern 7 is A0  Allow M2 A1 for sight of 25, 28, 31, (34) with an answer of 3
3	(3)	

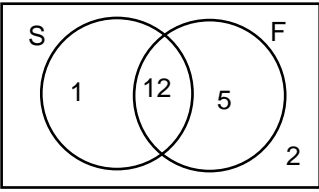
Eduqas Summer 2017 GCSE (9-1) Mathematics Component 1: Foundation Tier	Mark	Comment
15. (a) Valid comment e.g. 'Incorrect as the answer should be 22' or 'Square rooting is not the same as dividing by 2' or '242 squared is not 484'	B1	Allow eg 'Because to find a square root you need to find the number that multiplies by itself.'
(b) Valid comment e.g. 'The answer should be bigger than 2' or 'The answer is 2.77' or 'She should have added 2.00 not 0.02' or 'The 2 has the wrong place value.' or 'The two is in the wrong column.'	B1	Allow eg '2 is a whole number not a decimal.'
	(2)	
16. (a) $5 \times \frac{18}{12}$ or equivalent  £7.5(0) or 750p	M1  A1	or 1 hour = (£)18/12 = (£)1.5(0) or equivalent
(b) $1 + 2 + 3 (= 6)$    (72 ÷ 6) × 2 or equivalent  £24	M1    M1  A1  (5)	Allow for sight of 1 : 2 : 3 or equivalent or for 3 times in the ratio 1 : 2 : 3 seen or implied; may be implied by e.g. a multiple of 6 as the total number of hours  FT 'their 6' and 'their 2', provided 'their 2' follows their ratio and is a multiple of 2  CAO
17. (a) $70 \times 5 + 80 \times 1 + 90 \times 2 + 100 \times 2 (= 810)$  810 ÷ 10  81(p) or (£)0.81	M1  m1  A1	Allow one slip  FT 'their 810'  CAO
(b) 'Lower' and valid comment e.g. 'The prices are lower than the ones in the table' or 'Because the values in the table have been rounded up'	E1  (4)	Allow eg 'Lower because all the numbers would be smaller' Allow justification to be by calculation as well as comment
18. (length of fencing needed =) $5 + 10 + 5 + 8$ oe or 28  (3 full rolls cost) $3 \times 32 = (£)96$ or equivalent  (8 metres cost) $4.5(0) \times 8 = (£)36$ or (28 metres cost) $4.5(0) \times 28 = (£)126$ or (2 rolls and 8 metres cost) $2 \times 32 + 4.5(0) \times$ $8 = (£)100$ or valid alternative  Concluding (£)96 is the cheapest cost after finding the cost of 8 metres (£36) or 2 rolls and 8 metres (£100)	B1  M1  M1  A1  (4)	Allow this to be seen or implied by eg working to find 2 rolls and 8 metres or 3 rolls and 2 metres  Justification that a whole roll is cheaper than 8 single metres May be implied by sight of $64 + 36$ FT 'their derived 8'  Allow 3 full rolls is cheapest if the (£)96 was obtained earlier.



Eduqas Summer 2017 GCSE (9-1) Mathematics Component 1: Foundation Tier	Mark	Comment
19. $10r = 4r + 9$ or equivalent or $20r - 14r = 9$ or equivalent  $6r = 9$ or $r = \frac{9}{6}$ or 6 pieces = 9 (metres)  $(r = ) 1.5$ or $1\frac{1}{2}$ metres	M1  M1  A1  (3)	Formal notation is not required; may be in words  Implies first M1  CAO; mark final answer
20. (a) (other fat = ) $65 - 40 = 25$  $40 : 25$ (leading to $8 : 5$ )	B1  B1	Allow $40\text{g} : 25\text{g}$
(b) $\frac{2}{1000} \times 50$ or equivalent          $0.1$ (grams) or equivalent ISW	M2          A1	May be in steps e.g. $1000 \div 50 = 20$ , $2 \div 20$ or $100\text{g}$ is $0.2\text{g}$ of salt, $50\text{g}$ is $0.1\text{g}$ of salt  M1 for $\frac{2}{1000}$ or $\frac{50}{1000}$ or $2 \times 50$ or $1000 \div 50 = 20$ (servings) seen
(c) $\frac{0.1}{6}$       $\frac{1}{60}$	M1       A1	FT $\frac{\text{'their 0.1'}}{6}$ ;     FT 'their 0.1' provided 'their 0.1' is a decimal with at least one decimal place
21.* (a) $7x - 3x = 4 - 2$ or equivalent   $x = \frac{2}{4}$ or equivalent  (b) $3 - 2x + 18 = 5x$ or equivalent   $7x = 21$ or $x = \frac{21}{7}$ $x = 3$	B1   B1   B1  B1  B1	Seen or implied FT until 2nd error   FT Mark final answer  Seen or implied FT until 2nd error   FT  FT

Eduqas Summer 2017 GCSE (9-1) Mathematics Component 1: Foundation Tier	Mark	Comment
(c)(i) $3x > 6$ or $-6 > -3x$  $x > 2$ or $2 < x$	M1  A1	No marks for use of "=", unless finally replaced to give $x > 2$ then award M1 A1.  If M0 then SC1 for $x > \frac{8}{3}$
(c)(ii) Open circle at 2 with arrow right	B1	STRICT FT 'their (c)(i)' provided an inequality Accept any unambiguous notation; arrow could just be a line but must not clearly terminate unless this follows through from part (c)(i); mark intent
(8)		
22.* (a) (i) Valid comment e.g. 'The first line expresses an opinion' or 'It pushes you to give a low answer', or 'It tells you you should not be eating much chocolate'	E1	Do not allow 'She only asks about one day.'  Allow eg 'She says too much chocolate is bad for your health.'
(a)(ii) Appropriate criticism e.g. 'It is too vague' or 'How big is a piece?', 'Cannot answer no pieces.' 'Cannot answer more than 6'.	E1	Allow e.g. 'She is only asking about 1 particular day'.
(b) 'No' stated or implied with two valid reasons based on sample size, location, time or targeting teenagers e.g. '10 people is too few', 'People outside a supermarket are not likely to be teenagers'	E2	E1 for 'No' with only one valid reason  Allow eg 'The people could all be different' or 'Monday morning limits the type of people she can ask.' or 'A lot of people may be at work on a Monday morning.'
(4)		
23.* Arc (of circle) centre C radius 6 cm $\pm$ 2mm  Correct perpendicular bisector construction with appropriate arcs          Correct area shaded or indicated	B1  B2       B1	Tolerance $\pm$ 2mm and $\pm$ 2°  Award B1 for appropriate arcs and no line or line outside of tolerance ie no arcs no marks  FT provided a closed region bounded by an attempt at a perpendicular bisector, with or without arcs, and the arc of a circle centre C
(4)		

Eduqas Summer 2017 GCSE (9-1) Mathematics Component 1: Foundation Tier	Mark	Comment
24.* (a) $\begin{pmatrix} -6 \\ 20 \end{pmatrix}$	B2	B1 for each element or for $(3\mathbf{q}) = \begin{pmatrix} -12 \\ 21 \end{pmatrix}$ or equivalent seen or for $\begin{pmatrix} -6 \\ 20 \end{pmatrix}$ or for $\frac{-6}{20}$ or for $\frac{-6}{20}$
(b) $6 - 4m = 10$ or for $\begin{pmatrix} 6 \\ -1 \end{pmatrix} + \begin{pmatrix} 4 \\ -7 \end{pmatrix} = \begin{pmatrix} 10 \\ -8 \end{pmatrix}$ or $\begin{pmatrix} 6 \\ -1 \end{pmatrix} - \begin{pmatrix} -4 \\ 7 \end{pmatrix} = \begin{pmatrix} 10 \\ -8 \end{pmatrix}$ $m = -1$ $n = -8$	M1  A1 B1 (5)	FT-1 + 7m for 'their derived m'
25.* <b>(Riley, more than £20:</b> Sent separately, Insurance £750 each) Cost £26 seen or (Sent together, Insurance £1500) Cost £22 seen  <b>(James, less than £20:</b> Sent together, Insurance £1500) Cost £17.50 seen Valid statement or example using limit of accuracy. e.g. 'The masses could both be less than 1250g', 'One laptop could weigh 1230g and the other 1250g' 'They could have a total mass of 2460'  One valid assumption: 'Laptops can be sent separately' 'Laptops can be sent together' 'Packaging does not increase the mass to more than 2500g'	E1  E1  E1  E1  (4)	Not from wrong working    For recognising that the limit of accuracy has an impact on the problem; allow for a total mass between 2450 and 2550 or individual masses between 1225 and 1275  Appropriately stated; allow embedded statements eg 'If they are sent together then...' or 'If they are sent separately then ...' or 'If both laptops weigh less than 1250 g then ...' or 'Sent together...'

Eduqas Summer 2017 GCSE (9-1) Mathematics Component 1: Foundation Tier	Mark	Comment
26. (a)* 	B2	B1 for 12 in intersection on Venn diagram or for any 2 correct entries
(b)* $\frac{12}{20}$ or equivalent	B1	ISW FT 'their 12' provided 'their 12' < 20
(c) 1 + 5  $\frac{6}{20}$ or equivalent	M1  A1	FT 'their 1' + 'their 5'  FT $\frac{\text{'their 6'}}{20}$ provided 'their 6' < 20
	(5)	
27. (Hexagon is regular so) all sides equal or interior angles $120^\circ$ or equivalent or it has (6) lines of symmetry  Triangles $ABF$ , $BCD$ , $DEF$ are congruent or $ABF = 30^\circ$ or valid comment such as 'Three of the lines of symmetry are also lines of symmetry of the triangle'  Valid explanation e.g. 'The 3 sides $BF$ , $BD$ and $DF$ are the same length' or 'Each interior angle of the triangle is $120^\circ - 2 \times 30^\circ = 60^\circ$ '	B1  B1  E1	Angles may be marked on diagram  May be implied by use of isosceles triangles later.  Allow "the same" or equivalent for "congruent".  E1 is dependent on B2 being awarded.
	(3)	