GCSE MARKING SCHEME

AUTUMN 2017

GCSE
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 GCSE (9-1) Mathematics Autumn 2017 Component 1: Foundation Tier	Mark	Comment
1.(a) 23	B1	
1.(b) Any fraction equivalent to $\dfrac{4}{36}$	B1	e.g. $\dfrac{1}{9}$ or $\dfrac{2}{18}$
1.(c) 55(%)	B1	
1.(d) 6	B2	B1 for $14 \div 7 = 2$ or $3 \times 14 = 42$ or $3 \times 14 \div 7$
1.(e) 3	B2	Award B1 for sight of a first correct step. i.e. $(30 \times 0.5 =) 15$ or $\left(\dfrac{0.5}{5} =\right) 0.1$ or $\left(\dfrac{30}{5} =\right) 6$
	(7)	
2.(a)(i) Chord	B1	
2.(a)(ii) Correct diameter drawn from *A*.	B2	Mark intention of a straight line Accept *C* not labelled or mislabelled if clear. B1 for any diameter not drawn from *A*
2.(b) (*w* =) 265 (°) (*x* =) 125 (°) 180 – (95 + 55) or 125 – 95 (*y* =) 30 (°)	B1 B1 M1 A1	 seen or implied; FT 'their 125'
	(7)	

3.(a) 0.08 $\frac{3}{4}$ 76%	B2	Allow e.g. 0.08, 75%, 76% B1 for changing at least one value into a form such that 2 or more values can be compared e.g. $\left(\frac{3}{4}=\right)0.75$ or $\left(\frac{3}{4}=\right)75\%$ or (76% =) 0.76 or (0.08 =) 8% or $\left(\frac{3}{4}=\right)\frac{75}{100}$ and $(76\%=)\frac{76}{100}$ Allow 0.08 = 08%
3.(b) $200-\frac{1}{4}\times200-\frac{30}{100}\times200$ or equivalent (= 200 – 50 – 60) OR $\frac{45}{100}\times200$ or equivalent	M2	Award M2 for a complete method which may be seen in stages Award M1 for 200 – x – 60 or 200 – 50 – y or equivalent if method not seen. If no marks award SC1 for 50 + 60 (= 110) or for sight of 45% or equivalent
90	A1	CAO
	(5)	
4.(a) Valid explanation e.g. '£15.03 shared between 5 does not give you an answer in pounds and pence'	E1	Allow e.g. 'You cannot divide 15.03 by 5' or 'The sandwiches would be £3 each and that would add up to £15 plus the salad would be £18. He has been charged 3p too much.' or 'The sandwiches should all cost the same amount but the bill suggests they do not.' or showing that (£)3 × 5 + (£)3 = (£)18 and (£)3.01 × 5 + (£)3 = (£)18.05
4.(b) (9.45 − 1.05) ÷ 4	M2	or M1 for 9.45 − 1.05 or for 'their (9.45 − 1.05)' ÷ 4
(£) 2.1(0)	A1	
	(4)	

5.(a) Any six-sided closed shape with exactly one line of symmetry	B2	B1 for any hexagon, or for any shape with greater than 4 sides with exactly one line of symmetry If more than one shape has been drawn and not all are hexagons, it must be clear which shape is the answer.
5.(b)(i) Shape completed correctly.	B2	Must be a closed shape for B2 B1 for angle BCD measuring 60° (±2°) or for side CD = 4 cm (±2mm). or for side AD parallel to BC.
5.(b)(ii) Parallelogram	B1	CAO Ignore incorrect spelling if intent is clear.
	(5)	
6.(a)(i) 49	B1	
6.(a)(ii) −17	B1	
6.(a)(iii) 4	B1	
6.(b) A correct example of an even number resulting in an integer output.	E1	Allow a general argument e.g. 'Even numbers such as 2, 4, 6…. will always result in whole number outputs because an even number divided by 2 is a whole number'
A correct example of an odd number resulting in a non-integer output.	E1	Allow a general argument e.g. 'Odd numbers such as 1, 3, 5, … will have '.5' at the end of the output'
	(5)	
7.(a) 9, 11, 11, 13	B2	B1 for sight of 9 or for …., 11, 11, 13
7.(b)(i) 18	B1	
7.(b)(ii) 0	B1	Accept 'zero' or equivalent, do not accept 'impossible' or 'none' or equivalent. Allow $\frac{0}{18}$ (teams) or $\frac{0}{3}$ (8-seater boats) or $\frac{0}{4}$ (junior teams)
	(4)	

8.(a)(i) 8	B2	Not from wrong working B1 for 4×2 or equivalent or for a complete list or for a list of at least 6 distinct correct options with a numerical answer or a complete possibility space e.g. <table><tr><td></td><td>F</td><td>C</td><td>P</td><td>S</td></tr><tr><td>A</td><td></td><td></td><td></td><td></td></tr><tr><td>T</td><td></td><td></td><td></td><td></td></tr></table>
8.(a)(ii) Valid explanation e.g. 'Half the people may not choose apple pie.' or 'Toffee may be more popular than apple.' or 'We do not know if they are equally likely to be chosen.'	E1	
8.(b)(i) 60(%)	B1	Or equivalent fraction or decimal
8.(b)(ii) (40% of 120 =) 48 or (60% of 120 =) 72	B1	seen or implied
$(120 - 48) \times 3 + 48 \times 2$ or equivalent or $72 \times 3 + (120 - 72) \times 2$ or equivalent or	M2	FT 'their 48' or 'their 72' $(120 - \text{'their 48'}) \times 3 + \text{'their 48'} \times 2$ or $\text{'their 72'} \times 3 + (120 - \text{'their 72'}) \times 2$ or M1 for either product in the sum seen or implied 'their 48' must be an attempt at finding 40% of 120; 'their 72' must be an attempt at finding 60% of 120; if finding 40% of 120 and 60% of 120 independently, 'their 72' + 'their 48' must total 120.
(£) 312(.00) CAO	A1	
8.(c) 20	B2	B1 for $\dfrac{15}{0.75}$ or equivalent seen; may be in steps Allow B1 for e.g. repeated addition of 75p to try to make £15
	(10)	
9.(a) (−4, 3)	B1	Do not allow a column vector.
9.(b) Points correctly plotted at (1, 3) and (4, −2)	B2	B1 for each, ignoring mis-labelling or missing labels

9.(c) Line *AD* measured as 10 cm	B1	Seen or implied; allow ±0·2 cm
8 km (in 20 mins) or equivalent seen	B1	FT 'their 10' × 0.8
Justified conclusion e.g. 24 km in 60 mins or equivalent and 'yes' or (Time =) $\frac{8}{24} = \frac{1}{3}$ hours = 20 mins and 'yes' or (Distance =) $24 \times \frac{1}{3} = 8$ km and 'yes'	B1	FT 'their 10' × 0.8 × 3 correctly interpreted or '$\frac{\text{'their 10'} \times 0.8}{24}$' correctly interpreted or $24 \times \frac{1}{3} = 8$ km correctly compared to 'their 10' × 0.8
	(6)	
10.(a) 32	B2	B1 for $(5^2 =)$ 25 or for $(\sqrt{49} =)$ 7
10.(b) $\frac{40 \times 100}{10}$	M1	for any two values correctly rounded
400	A1	
	(4)	
11.(a) Valid comment. e.g. 'The symbol used cannot easily be divided into 4 equal pieces as required.' or 'It is not clear how many people came on Tuesday and Thursday.'	E1	Allow e.g. 'The pictogram uses a hand with 5 fingers but it only stands for 4 people.' or 'The key is not a clear representation of 4 people.' or 'The two pictures that are to represent half of the people are different.'
11.(b)(i) Comment about the non-uniform vertical scale e.g.'The vertical scale is not evenly spaced'	E1	Allow e.g. 'The scale as it goes 1 to 3 and then 6.'
11.(b)(ii) Valid impact e.g. 'The drop in sales looks less than it actually is.' or 'It makes the sales look better than they were.'	E1	Allow e.g. 'It misrepresents the data shown.'
	(3)	
12.(a) Attempts 250 ÷ 4 or At least two improving trials listing costs of approximately equal quantities of pens and cards	M1	Or for one trial with any whole number of pens from 60 to 65 e.g. 62 pens and 62 cards
63 pens and 61 cards or 62 pens and 64 cards ISW	A2	Award A1 for sight of any one of these pairs: <table><tr><td>Pens</td><td>60</td><td>61</td><td>64</td><td>65</td></tr><tr><td>Cards</td><td>70</td><td>67</td><td>58</td><td>55</td></tr></table>
12.(b) Fred 75	B2	B1 for (5% of 500 = £) 25
Ceri 4	B2	B1 for 60 ÷ 'their 5% of 300'
	(7)	

13.(a) No and valid explanation e.g. 'According to the formula, it takes 20 minutes to cook no meat.' or 't should be 0 when p is 0.'		E1	Allow e.g. 'No because if p = 0 then the meat wouldn't exist and would not need cooking.' Do not allow e.g. 'It is not valid as there would be no pounds.'
13.(b)(i) Completes table correctly. <table><tr><td>p</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>t</td><td>45</td><td>70</td><td>95</td><td>120</td></tr></table> Plots all four points correctly Draws a single, straight line through their points		B1 P1 L1	May be implied by correct line drawn, even if it extends outside the given domain. May be implied FT their points if possible for P1 and L1 May not be ruled; tolerance 1 small square in all directions.
13.(b)(ii) 2.8 (pounds)		B1	FT their graph or accept answers in the range 2.75 to 2.85 (pounds).
13.(c) (When $p = 2$, $t = 70$, so required time is $70 + 15 - 45 =$) 40 (minutes)		B2	FT their value of t when $p = 2$ from their graph or their table; for B2 their value of t must be greater than 45 B1 for the calculation 'their 70' + 15 – 45 or equivalent, seen or implied or SC1 for a final answer of 25 (minutes) or equivalent (ignoring the 15 minutes extra for the meat)
		(7)	
14.(a) Graph 2 indicated		B1	
14.(b)(i) (Science =) 48 (%) (Maths =) 36 (%) (Science =) 65 (%) (Maths =) 60 (%)		B2	B1 for any two correct
14.(b)(ii) $\frac{4}{9}$ ISW		B2	Award B1 for sight of 4 as a numerator (students scored more than 70%)
		(5)	
15.(a) 125		B1	
15.(b)(i) −8, 0, 8		B2	B1 for any two terms correct in the correct position or SC1 for −16, −8, 0
15.(b)(ii) Yes, stated or implied AND $4^2 = 16$ and $8(4) - 16 = 32 - 16 = 16$ or $8 + 8 = 16$		B1	Accept e.g. 'yes they are both 16'.
		(4)	

*16.(a) $\begin{pmatrix} 9 \\ 9.5 \end{pmatrix}$	B2	B1 for each element or for $2\mathbf{p} = \begin{pmatrix} 10 \\ 8 \end{pmatrix}$ or equivalent seen or for $\begin{pmatrix} 9 \\ 9.5 \end{pmatrix}$ or for $\begin{array}{c} 9 \\ 9.5 \end{array}$ or for $\dfrac{9}{9.5}$
*16.(b) Line of correct length and direction: 	B2	B1 for correct length but direction omitted or incorrect or for correct direction but incorrect length
(4)		
*17.(a)(i) Valid criticism about the instruction or response boxes. e.g. 'You may want to tick more than one box.' or 'You may have used it to do something else like go on the internet.' or 'You may not have done any of these things.'	E1	Do not allow e.g. 'They may not have a mobile phone.'
*17.(a)(ii) Valid criticism about the vagueness of the times used e.g. 'It does not say what *a lot* means.'	E1	
*17.(b)(i) Valid comment. e.g. 'Not reliable as only 5 students.' or 'Not very reliable, she needs to ask more people'	E1	
*17.(b)(ii) SIM only is better because e.g. 'the bills are less varied (as the range is £3 compared to £65 for Pay-as-you-go.)' or 'SIM only bills are all about the same' or 'Pay-as-you-go bills are more spread out'.	E1	Do not allow e.g. 'it has the cheaper highest bill.'
Pay-as-you-go is better because e.g. 'the average monthly cost is less (as the mean is £12.75 compared to £16.25 for SIM only.' or 'Most Pay-as-you-go bills will be less than £12.75' or 'The mean Pay-as-you-go bill is lower than the lowest SIM only bill.'	E1	Do not allow e.g. 'it has the cheaper lowest bill.'
(5)		

7

*18. Correct construction with arcs	B2	B1 for correct arcs Tolerance $\pm 2°$	
	(2)		
*19. (a) $x^2 - 3x - 10$	B2	B1 for $x^2 - 3x + ...$ or for any three correct terms in $x^2 + 2x - 5x - 10$	
*19.(b) $18a$	B2	Condone 18 a^1 for 2 marks. B1 for $k \times a^1$ or equivalent	
	(4)		
*20(a)(i) y is inversely proportional to x indicated	B1		
*20(a)(ii) (x =) 0.25 or equivalent	B2	B1 for $100 = \dfrac{25}{x}$ seen Do not accept y = 0.25 or equivalent	
*20(b) $\dfrac{4}{0.8}$ or equivalent 5 (m/s) or equivalent	M1 A1	Allow e.g. '1 metre every 0.2 seconds.'	
	(5)		
*21(a)(i) 14π	B1	allow 43.96	
*21(a)(ii) 4	B1		
*21(b) (diameter =) 6 (cm) 9π or $\pi \times 9$ or equivalent	B1 B2	May be on diagram Mark final answer B1 for $\pi \times 3^2$ or equivalent If no marks award SC1 for an answer of 36π or 144π	
	(5)		
22. (a) $\dfrac{30}{35} - \dfrac{14}{35}$	M1	or equivalent	
$\dfrac{16}{35}$	A1		

*22.(b) ($a =$) 28 ($b =$) 35 ($c =$) 55		B3	B1 for each correct value or B2 for 35 and attempting 4×7 and 11×5 or for a set of values in the correct ratio that are not 2-digit e.g. 56, 70, 110 or B1 for a common multiple of 5 and 7 or for two pairs of two-digit numbers in the ratio 4 : 5 AND 7 : 11
*22.(c) $205 \div 5 \times 8$ or equivalent 328 (cm) or equivalent		M1 A1	Must be a complete method CAO
		(7)	

*23.(a)

$3 \times \dfrac{4}{6} \times \dfrac{10}{5}$ or equivalent, seen or implied — **M2**

May be in steps or as statements e.g.

Workers	Tonnes	Hours
6	5	2
6	10	4

or

Workers	Tonnes	Hours
6	7.5	3
6	10	4

M1 for one correct step seen or implied

e.g. $3 \times \dfrac{10}{5}$ or $3 \times \dfrac{4}{6}$

or one correct statement e.g.

Workers	Tonnes	Hours
1	1.25	3
6	5	2
6	7.5	3
4	10	6
8	10	3

or equivalent
NB 4 workers 5 tonnes 3 hours is given and does not score on its own

4 (hours) — **A1**

*23.(b) Valid assumption. e.g. 'The goods are all of the same type.' or 'The vehicles used are the same.' or 'The goods can all be loaded into one vehicle.' Valid impact. e.g. 'If the goods are heavier, they may take longer to load.' or 'The load time would be longer if the vehicle could not take all 10 tonnes at once.'		E1 E1	Allow 'The workers did not need to take any breaks.' Do not allow e.g. 'They can all lift the same weight.' Allow 'The load time would be longer if they had to take breaks.'
		(5)	