GCSE MARKING SCHEME

AUTUMN 2017

GCSE
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.

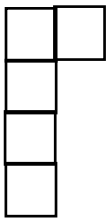
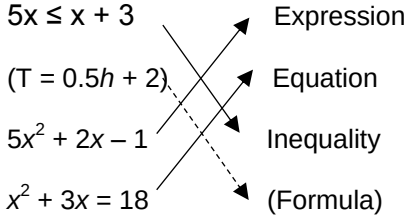
WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

Eduqas GCSE Mathematics Autumn 2017 Component 2 Foundation Tier	Mark	Comment
1. (a) (£) 36	B1	
1. (b) 17.50 x 7 – 110 (=122.5(0) - 110) = (£) 12.5(0)	M1 A1	
1. (c) (i) 19.50 x 6 – 115 = (£) 2	M1 A1	Allow 115 - 19.50 x 6 Do not allow -2 as a final answer without interpretation.
1. (c) (ii) explaining that it is (£2) cheaper (to pay for a week.)	E1 (6)	
2. (a) 28 x 7.50 + 30 = (£) 240	M1 A1	
2. (b) (i) Suitable explanation e.g. '£100 - £30 is £70 which does not divide by 7.50 to give a whole number of hours', or '9 x £7.50 = £67.50 and £67.50 + £30 = £97.50', and '10 x £7.50 = £75 and £75 + £30 = £105', (so £100 can't come from a whole number multiple of £7.50), or 'No multiple of £7.50 + 30 makes £100', or 'The pay for 9 hours is £97.50, another £7.50 makes £105, so £100 not possible', or '$9^1/_3$ hours makes £100, but the company only pays for whole number of hours', or 'There is no whole number that multiplies by £7.50 to give £70'.	E1	
2. (b) (ii) 9 (hours).	B1 (4)	
3.	B3	Award B1 for each correct row.

	1	3	5	15	27
Prime		✓	✓		
Multiple 3		✓		✓	✓
Factor 30	✓	✓	✓	✓	

(3)

4. (a) Complete the cards with 3 odd and 3 even numbers.	B1	
4. (b) Explains that there needs to be more even numbers than odd, e.g. 'change one of the odd numbers for an even number'.	E1 (2)	Allow explaining by giving an example or demonstration, including reference to 'their (a)'

5.  indicated	B1 (1)	Accept any indication
6. (a) (i) 3.21	B2	B1 for 3.2(087…..) OR B1 for correct rounding of incorrect answer, provided a decimal with more than 2 decimal places seen.
6. (b) $^{5}/_{100}$ indicated	B1 (3)	Accept any indication.
7. 	B1 (1)	CAO
8. (a) $^{2}/_{5}$	B2	B1 for a fraction with a numerator of 2 OR denominator of 5. If no marks awarded then SC1 for 5/2.
8. (b) 40 (%)	B1 (3)	FT 'their $^{2}/_{5}$' converted correctly.
9. (a) 200 (g)	B1	
9. (b) 1 pear 600÷5 (=120(g)) 2 x 200 + 2 x 600÷5 = 640 (g)	M1 M1 A1 (4)	FT 'their 200' used correctly throughout.
10. (a) $4a + 7b$ or equivalent	B2	B1 for $4a$ or $7b$ For B2, an expression must be given.
10. (b) $3x + 15$	B1	
10. (c) No AND an acceptable explanation, e.g. 'if $c = 5$ then $5c^2 = 125$. $c^2 + 4c = 45$. (They are not the same)', or 'c and c^2 are different and cannot be added', or 'Can only collect like terms'	E1	
10. (d) (i) $^{f}/_{2}$, or $\frac{1}{2}f$	B1	Allow $f \div 2$ or $0.5\,f$
10. (d) (ii) $^{f}/_{2} + 5$ or $\frac{1}{2}f + 5$ or $(f + 10)/2$	B1 (6)	FT 'their $^{f}/_{2}$' + 5 provided it is using algebra.

11. (a) explaining that Rita could have been correct because 3 x 20 = 60.	E1	Can ignore any reference to cars staying less than 30 mins.
11. (b) 24 cars for up to 4 hrs (£2.50) OR 75 cars for up to 1 hr. (80p) OR any other arrangement totalling £60	B2 (3)	Award B1 for a clear attempt at an arrangement totalling £60 with errors.
12. (Area of wall =) $7 \times 3 - 2 \times 1 - 1.6^2 \times 2$ (m^2) = 13.88 or 13.9 or 14(m^2) 3 (tins needed as 3 x 6 = 18 or 13.88 ÷ 6 = 2.3(13…))	M2 A1 B1 (4)	Award M1 for sight of two correct areas used. FT 'their 13.88' used provided at least M1 awarded.
13. (a) (i) Explains that congruent means (the triangles are) exactly the same shape and size.	E1	
13. (a) (ii) Correct translation of triangle A. i.e. 3 squares right and one square down.	B2	B1 for a correct horizontal or vertical translation Correct coordinates are (7,6),(7,3) & (9,3)
13. (b)(i) Right-angled (scalene) triangle	B1	Accept 'right-angled' or 'scalene'
13. (b)(ii) Correct enlargement by scale factor 3.	B2 (6)	Award B1 if correct enlargement using another scale factor.
14. (a) 12+12+5+14+12+8+6 or equivalent = 69 (hours)	M1 A1	Allow one error, including a repeated error. CAO
14. (b) (i) Sight of 7.5 hours or 7h 30m *Alternatives* (M-F 8am-) | 8:30pm | 9:00pm | 9:30pm (Sat 9am -) | 11pm | 8:30pm | 6pm	B1 B2	 FT 'their derived 7.5' Award B1 for a clear attempt to increase the opening times by 7.5 hours. If no marks awarded, SC1 for a 'correct' solution using 'their 7.5'. Note that other answers are possible, including those who do not work with whole or half hours.
14. (b)(ii) 7.5 x 24 x 8.50 OR 82.5 x 24 x 8.50 – 75 x 24 x 8.50 OR 75 x 24 x 8.50 x 0.1 = (£) 1530 Assumptions including 'all the 24 workers are doing the extra time', 'all the workers doing the extra time are paid the mean pay' or 'there is no increased overtime rate'. Impact statement – e.g. 'the weekly pay increase calculated is higher than it is likely to be' OR 'weekly pay may be higher if they have to pay overtime at a higher rate'	M2 A1 E1 E1 (10)	FT 'their 7.5' x 24 x 8.50 M1 for 24 x 8.50 OR 7.5 x 8.50 OR 7.5 x 24 Any alternative calculations must be accounted for in their assumption in (b)(ii). Their impact must match 'their assumption'

15. (a) (i) 360 – (135+45+60) OR 360 – 240 OR 120 $^{120}/_{360}$ or equivalent	M1 A1	 Any simplification must be correct. If M0, award SC1 for a fraction with a denominator of 360 AND a numerator of 118 or 119 or 121 or 122.
15. (a) (ii) ($^{1}/_{3}$ of 1200 =) 400	B1	FT 'their $^{120}/_{360}$'
15. (b) (i) Calculation of frequencies Bike 150, car 200, bus 450, walk 400 Correctly drawn bar graph.	M1 A1 B2	Award M1 for angle/360 x 1200 OR Sight of 3 correct frequencies. Fully correct bar chart will imply M1A1. Award B1 for correct labelling of axes and scale. B1 for correct bar heights.
15. (b)(ii) One valid advantage or disadvantage, e.g. 'bar graph easier to read the frequency' or 'pie chart more difficult to read the frequency' or 'bar chart clearer' or 'the bar graph is easier to draw' , or 'in the pie chart, it is easier to see the proportions of the1200 students who use each type of travel'.	E1 (8)	
16.(a) (i) Ratio 7:10 or 10:7	B1	
16.(a)(ii) 7x 6970 ÷ (7+10) or10x 6970 ÷(7+10) Ian (£)2870 Stacey (£)4100	M1 A1 A1	Or equivalent. FT 'their 7:10' If A0A0 allow SC1 for reversed answers
16.(b) Ellie has $^{9}/_{32}$ or equivalent proper fraction.	B2 (6)	Allow B1 for Lenny's share being 9/16 or Ellie's share being $^{4.5}/_{16}$ OR $^{9}/_{(1 + 6 + 9) \times ½}$
17. Method to find unit cost e.g. 185 ÷ 570 (= 0.32) (p/g) 240 ÷ 700 (= 0.34) (p/g) 0.32, 0.34 AND '570(g) better value'	B2 B1 (3)	Award B1 for each. Accept alternative convincing methods e.g. 570 ÷ 185 (= 3.08) (g/p) 700 ÷ 240 (= 2.92) (g/p) OR working in £ OR comparing 100g etc FT their values provided at least B1 awarded and comparing equal masses or equal costs.
18. (a) Correct point plotted to create a square.	B1	The plots do not need to be joined.
18. (b)(i) 2	B1	
18. (b)(ii) Adds squares to the rectangle to create a correct shape with rotational symmetry of order 4 e.g. creates a 4x4 square.	B1 (3)	

19. (a) ½ (8 x 5.5) = 22 (cm^2)	M1 A1	
19. (b) (22 x 4.5) = 99 (cm^3)	B1	FT 'their 22' correctly evaluated.
19. (c) Explains that 50mm is bigger than 4.5cm, the other measurements have not changed so the volume must be bigger. Or equivalent.	E1 (4)	
20. (a) explaining that 0.8 is incorrect. e.g 'It is not 0.8, it should be 0.08' or equivalent.	B1	Accept any indication that 0.8 is incorrect e.g. 'the first line is 198.4 not 1984'.
20. (b) 2480 x 0.08 + 2480 OR 198.4(0) + 2480 = (£) 2678.4(0)	M1 A1	
20. (c) 1.08	B1 (4)	
21. (a) 165 (g) Butter 165 (g) Sugar 270 (g) Flour 6 tablespoons mincemeat	B2	B2 for all correct B1 for 3 correct or sight of 1.5 as scale factor.
21. (b) 315 ÷ 180 or 315 ÷ 270 x 8 or x 12 = 14 (servings)	M1 M1 A1 (5)	 CAO *Alternative method:* Extra 45g 180/45 = 4 or 270/45 = 6 M1 ¼ of 8 = 2 or 1/6 of 12 = 2 M1 (12 + 2) = 14 (servings) A1
22. Use of Pythagoras Theorem $7^2 + 12^2 = (\text{hypotenuse})^2$ (Hypotenuse =) 13.89 (m) Conclusion stated or implied that he is not correct, e.g. 'Sid's walls do not meet at right angles' or equivalent.	M1 A1 E1 (3)	 Only award E1 provided M1 previously awarded. Alternative method 1: $7^2 + 12^2$ B1 193 AND $14^2 = 196$ B1 No because they are not the same. E1 Alternative method 2: $14^2 - 12^2 = 196 - 144$ (= 52) B1 52 AND $7^2 = 49$ B1 $52 \neq 49$, so no. E1
23. 2 × 330 ÷ 15 (£)44	M1 A1 (2)	For a full method although may be seen in stages

24.(a) 2	B1	
24.(b) 'Yes' selected or unambiguously implied AND a reason, e.g. 'Yes, 4 + 5', 'Yes it is possible to score 9'	B1	Ignore further irrelevant statements
24(c) States or implies that the list to score 5 is incomplete, e.g. 'Ryan has missed 4+1 and 3+2 States or implies that $\frac{\text{number of ways of scoring 5}}{\text{the number of outcomes}}$ is a correct method 4/20 (= 1/5)	M1 M1 A1 (5)	 Accept sight of $\frac{4}{\text{'their number of outcomes'}}$, provided 'their number of outcomes > 10, or sight of 1/5 ISW. Depends on M1, M1 previously awarded *If no marks, allow SC1 for an answer of 2/20 or equivalent*
25. 3000×1.025^7 (£)3566(.0572…) (£)434	M1 A1 B1 (3)	Or equivalent full method. Use of 25% in the calculation is not a misread CAO Provided at least 6 years of correct calculations, with incorrect interpretation of the number of years, allow MR-1, then possible M1, A1 but B0
26.(a) Midpoints 2, 5, 8, 12 $2\times4 + 5\times14 + 8\times10 + 12\times2$ $\div 30$ 6(.0666…mm)	B1 M1 m1 A1	 FT 'their midpoints' provided these are at the bounds or within the groups (8 + 70 + 80 + 24 = 182)
26.(b) Explanation, e.g. 'Hightown is only an estimate', 'Hightown mean was calculated using midpoints', 'more of the Hightown results might be below the midpoints'	E1 (5)	Accept a suitable example
27.(a) $11x - 9x = 25 + 3$ $2x = 28$ or $x = 28/2$ $x = 14$	B1 B1 B1	FT until 2nd error
27.(b) $5x(x + 2)$	B2 (5)	B1 for a correct partially factorised answer, or $5x(x \ldots)$ or $5x(\ldots + 2)$

28. Density $\frac{1538}{4/3 \times \pi \times 3.6^3}$ (g/cm^3) 7.86(… g/cm^3) or 7.87 (g/cm^3) AND states 'iron'	M3 A2 (5)	M2 for $\frac{1.538}{4/3 \times \pi \times 3.6^3}$ or with other place value error, OR M1 for 'digits 1538' 'their volume' provided 'their volume' is dimensionally correct OR M1 for sight of $4/3 \times \pi \times 3.6^3$ CAO A1 for 7.86(…(g/cm^3)) or 7.87 (g/cm^3)
29.(a) $y = 4 - 3x$	B1	
29.(b) $y = 2x + 4$	B2 (3)	B1 for $y = 2x \pm \ldots$ or $y = \ldots x + 4$