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# **GCSE MARKING SCHEME**

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**SUMMER 2016**

**GCSE MATHEMATICS LINKED PAIR METHODS  
UNIT 2 FOUNDATION  
4364-01**

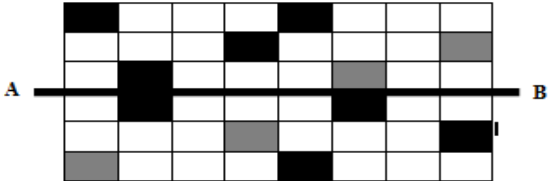
## **INTRODUCTION**

This marking scheme was used by WJEC for the 2016 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.

**METHODS IN MATHEMATICS**  
**UNIT 2 (FOUNDATION TIER) - SUMMER 2016**

Methods in Mathematics Unit 2 Foundation Tier	Mark	Comments
1. 22 81 63 121	B1 B1 B1 B1 4	
2. (a) 1568 (b) 8516 (c) 50% and 1/2	B1 B1 B2  4	B1 for 1 correct and no more than 1 incorrect B1 for 2 correct and 1 incorrect
3(a) (i) Correct shading (ii) $12/20 \times 100(\%)$ 60(%)  (b) $\frac{1}{2}$ and $\frac{1}{8}$	B1 M1 A1  B2  5	Any 6 sectors shaded or equivalent  or equivalent B1 for each correct entry
4(a)   (b) 3 2	B2     B1 B1  4	B1 for 4 correct and 1 incorrect OR for 2 or 3 correct and up to 1 incorrect OR for 6 shaded to produce a symmetrical diagram

Methods in Mathematics Unit 2 Foundation Tier	Mark	Comments
<p>5. (3 minibuses have) 48 (seats) (1 minibus) 2 teachers 14 pupils OR (3 minibuses) 6 teachers 42 pupils (Total left) 135 or 12 teachers and 123 pupils left 135/45 =3 (coaches) 4 teachers AND 41 pupils on each coach</p> <p>Look for:</p> <p>Clear and detailed method and explanations throughout. Labelling to aid communication</p> <p>QWC2: Candidates will be expected to</p> <ul style="list-style-type: none"> <li>• present relevant work clearly, with words explaining process or steps</li> </ul> <p>AND</p> <ul style="list-style-type: none"> <li>• make few if any mistakes in spelling, punctuation and grammar</li> </ul> <p>QWC1: Candidates will be expected to</p> <ul style="list-style-type: none"> <li>• present work clearly which is mostly relevant, with words explaining process or steps</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• make few if any mistakes in spelling, punctuation and grammar and include units in their final answer</li> </ul>	<p>B1 B1  B1 M1 A1 B1</p> <p>QWC 2</p> <p>8</p>	<p>Implies 1<sup>st</sup> B1</p> <p>FT ‘their 48’ FT ‘their 165+18-3×16’ / 45</p> <p>Implies first three B marks</p> <p><i>Allowance for extra driver’s seat – gets full marks.</i> Award B1 B0 B1 M1 A1 B1 for (3 minibuses have) 48 pupils (Total left) 117 pupils with 12 teachers 129/3 = 43 (seats) 4 teachers AND 39 pupils on each coach OR (3 minibuses have) 48 pupils (Total left) 117 pupils with 18 teachers 135/45 3 (coaches) then 6 teachers and 39 pupils on each coach</p> <p>QWC2 Presents relevant material in a coherent and logical manner, using acceptable mathematical form, and with few if any errors in spelling, punctuation and grammar.</p> <p>QWC1 Presents material in a coherent and logical manner but with some errors in use of mathematical form, spelling, punctuation or grammar OR evident weaknesses in organisation of material but using acceptable mathematical form, with few if any errors in spelling, punctuation and grammar.</p> <p>QWC0 Evident weaknesses in organisation of material, and errors in use of mathematical form, spelling, punctuation or grammar.</p>

Methods in Mathematics Unit 2 Foundation Tier	Mark	Comments												
6.(a) $21 \times 13$ 273 cm <sup>2</sup>  (b) $9 \times 4$ or $9+9+9+9$ 36(cm) 36/3  12(cm)	M1 A1 U1  M1 A1 M1  A1 7	Independent mark  FT for 'their perimeter of the square' provided their perimeter $\geq 18$												
7.(a) 1 6 -12 40  (b) Any correct equation in $x$ with solution $x = 3$ (c) Any correct equation in $x$ with solution $x = -10$	B1 B1 B1 B1  B1 B1 6													
8.(a) 1800  (b) 55.6	B2  B2 4	B1 for 1811.3(47232...) or 1800.0(000..)  B1 for 55.5(5555...)												
9. (a) $8.9/100 \times 589$ 52.421  (b) $3/7 \times 917$ 393  (c) For all 4 correct in forms which allow comparison     7/8	M1 A1  M1 A1  M2    A1 7	Allow 52.(42)    Award M1 for 2 or 3 correct in a form which allows comparison e.g. <table border="1" style="margin-left: auto; margin-right: auto;"><tr><td>2/3</td><td>7/8</td><td>9/12</td><td>5/6</td></tr><tr><td>16/24</td><td>21/24</td><td>18/24</td><td>20/24</td></tr><tr><td>0.66(6..)</td><td>0.875</td><td>0.75</td><td>0.83(3..)</td></tr></table>	2/3	7/8	9/12	5/6	16/24	21/24	18/24	20/24	0.66(6..)	0.875	0.75	0.83(3..)
2/3	7/8	9/12	5/6											
16/24	21/24	18/24	20/24											
0.66(6..)	0.875	0.75	0.83(3..)											
10. (a) Tangent (b) Diameter (c) $(20 \times 20) = 400(\text{cm}^2)$ $\Pi \times 10^2$ 314.(.....)(cm <sup>2</sup> ) $(400-314.(...)) =$ 85.7 - 86(cm <sup>2</sup> )	B1 B1 B1 M1 A1 B1  6	FT 'their $20 \times 20$ ' (provided they are working with area) and 'their radius' if answer $> 0$ If M0 A0 B0 then SC1 if 20 used for radius and 400-628 or $(\pm)228$ seen												

Methods in Mathematics Unit 2 Foundation Tier	Mark	Comments
11. (a) $(x=)125$ (b) $4t=20$ or $4t=8+12$ or $t-3=2$ $t=5$ (c) $(x=)8$ (d) $6x < 100 - 4$ or $6x < 96$ or $3x < 50-2$ or $3x < 48$ $x < 16$ (e) $x < 81/3$ or $x < 27$ or $78 < 81$ $(x=) 26$	B1 B1 B1 M1 A1 M1 A1 8	Accept embedded answers in a, b and c FT from 1 error. Mark final answer. Do not accept 72/9 No marks for use of "=", unless finally replaced to give $x < 16$ then award M1 A1. SC1 for $x < 104/6$ ISW Or sight of $3 \times 26 = 78$ with $3 \times 27 = 81$ or equivalent divisions Accept unsupported 26, or a unique answer of 26 from a trial and improvement method, or $3 \times 26 < 81$ Do not accept $x < 26$ . Allow sight of $3x = 81$ , $x = 27$ followed by selecting $x = 26$
12.(a) Enlargement of scale factor 2 (b) Shape completed accurately with correct rotation seen	B2 B3 5	B1 for any two adjacent lines correct or 3 points correct B1 for correct enlargement using different factor or B1 for a 'nearly correct' enlargement using scale factor 2 With no other 90° rotations shown B2 for at least two lines correct in attempting to complete the shape with correct rotation of their shape with no other 90° rotations shown, OR B1 for the shape completed correctly, or a correct rotation of the part of the shape given, ignore other 90° rotations shown
13(a) $3x + x$ OR $4x(\text{cm})$ (b) $(x =) 40$	B1 B2 3	Mark final answer FT for $8x + \text{'their FE'} = 480$ B1 for sight of $12x = 480$ or equivalent informal notation
14. $(x^2 =) 6.8^2 + 8.4^2$ $x^2 = 116.8$ or $\sqrt{116.8}$ OR $(y^2 =) 9.3^2 - 6.8^2$ $x = 10.8(07\dots)$ OR $y^2 = 40.25$ or $\sqrt{40.25}$ $y = 6.3(44\dots)$	M1 M1 A1 A1 A1 5	Accept 11 from correct working Accept 6 from correct working
15.(a) Correct rotation (b) Correct reflection in $y = x$	B2 B2 4	B1 near miss of grid lines, or for anticlockwise 90° about (2, 0), or for clockwise 90° about (0, 2) B1 for sight of the line $y = x$ or a reflection in $y = -x$ ,