



---

# **GCSE MARKING SCHEME**

---

**SUMMER 2016**

**GCSE MATHEMATICS UNITISED UNIT 2  
HIGHER TIER**

**4352/02**

## **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.



<p style="text-align: center;"><b>Summer 2016 Unitised Unit 2 HigherTier</b></p>	<p style="text-align: center;"><b>M a r k</b></p>	<p style="text-align: center;"><b>Comment</b></p>
<p>3. Angle <math>BFC</math> or Angle <math>DFG = 42(^{\circ})</math> OR Angle <math>CFD</math> or Angle <math>BFG = 138(^{\circ})</math></p> <p style="text-align: center;"><math>(y =) (180 - 138)/2</math> or <math>(y =) (180 - [180 - 42])/2</math></p> <p style="text-align: center;"><math>(=) 21(^{\circ})</math></p>	<p>B1</p> <p>M1</p> <p>A1 3</p>	<p>May be implied. Check diagram.</p> <p>Or 'Exterior Angle <math>BFC</math>' / 2 FT 'their <math>42(^{\circ})</math>' or 'their <math>138(^{\circ})</math>'</p>
<p>4. <math>11x - 1 = 8x + 20</math></p> <p style="text-align: center;"><math>3x = 21</math></p> <p style="text-align: center;"><math>x = 7</math></p>	<p>B1</p> <p>B1</p> <p>B1 3</p>	<p>FT until 2<sup>nd</sup> error.</p> <p>Mark final answer.</p>
<p>5. <math>-2, -1, 0, 1</math></p>	<p>B3</p> <p>3</p>	<p>B2 for a list with one omission or one extra number.</p> <p>B1 for 2 correct integers (and no incorrect integers).</p> <p>If an incorrect inequality is given, FT for B2 provided <math>-2.5</math> or <math>1</math> seen and equivalent difficulty.</p> <p>If no integers are listed, B1 for <math>-2.5 &lt; n \leq 1</math> or for <math>-2.5 &lt; n</math> <u>and</u> <math>n \leq 1</math> (or equivalent).</p> <p>Award B0 for a list arising from <math>-5 &lt; n \leq 2</math> (i.e. disregarding the factor of 2).</p>
<p>6. <math>400 - 0.35 \times 400</math> or equivalent OR <math>0.65 \times 400</math></p> <p style="text-align: center;">(No. of non-green beads =) 260</p> <p>(260 – no. of blue beads OR no. of white beads =) <math>260 - 260 \div 5 \times 2</math> OR <math>260 \div 5 \times 3</math> = 156</p> <p>(Probability of picking a white bead =) <math>156/400</math> (= <math>39/100</math> or equivalent)</p>	<p>M1</p> <p>A1</p> <p>M1</p> <p>A1</p> <p>A1</p> <p>5</p>	<p>Complete method for finding the number of non-green beads.</p> <p>FT 'their number of non-green beads'.</p> <p>FT their answers provided both M1 marks awarded. ISW</p> <p style="text-align: right;"><i>Alternative method:</i> <math>2/5 \times 65\%</math> B1 (Probability of picking white =) <math>100\% - 35\% - 2/5 \times 65\%</math> (FT 'their 65%') M2 <math>100\% - 35\% - 26\%</math> (FT 'their 26%') M1 = 39% (= 0.39) A1</p> <p style="text-align: right;"><i>Alternative method:</i> <math>3/5 \times 65\%</math> (= <math>195/500</math>) = 39%</p> <p>If M0A0, award SC1 for sight of 140 OR if M0A0 and the word 'remaining' has been ignored, award SC2 for a final answer of <math>1/4</math> or equivalent, SC1 for 140 green beads or 100 white beads.</p>

Summer 2016 Unitised Unit 2 Higher Tier	M a r k	Comment															
7. (a) $9n - 1$	B2	B1 for sight of $9n$ or equivalent.															
(b) $(n + 2)^2 + 4$ or equivalent	B3          5	B2 for $(n + 2)^2 + a$ or for omitting brackets.  B1 for $(n + k)^2 + 4$ OR B1 for each correct term in $n^2 + 4n + 8$ , within a quadratic with more than one term OR B1 for listing the terms of the sequence and finding a 2 <sup>nd</sup> difference of 2.  Look out for alternative ways of considering the spatial arrangements leading to e.g. $n^2 + 4(n + 3) - 4$															
8. (a) <table border="1" data-bbox="293 808 560 965" style="margin-left: auto; margin-right: auto;"> <tr> <td>(40)</td> <td>(50)</td> <td>(60)</td> </tr> <tr> <td><u>28</u></td> <td><u>36</u></td> <td><u>45</u></td> </tr> <tr> <td><u>28</u></td> <td><u>36</u></td> <td><u>45</u></td> </tr> <tr> <td><u>40</u></td> <td><u>50</u></td> <td><u>60</u></td> </tr> <tr> <td><u>0.7</u></td> <td><u>0.72</u></td> <td><u>0.75</u></td> </tr> </table>	(40)	(50)	(60)	<u>28</u>	<u>36</u>	<u>45</u>	<u>28</u>	<u>36</u>	<u>45</u>	<u>40</u>	<u>50</u>	<u>60</u>	<u>0.7</u>	<u>0.72</u>	<u>0.75</u>	B1 B1 B1	CAO FT from 1 error, this error may have an impact on further cumulative values, but this counts only as 1 error FT their fractions as decimals, provided between 0 and 1 (not inclusive), accuracy to 2 d.p. if appropriate.
(40)	(50)	(60)															
<u>28</u>	<u>36</u>	<u>45</u>															
<u>28</u>	<u>36</u>	<u>45</u>															
<u>40</u>	<u>50</u>	<u>60</u>															
<u>0.7</u>	<u>0.72</u>	<u>0.75</u>															
(b) All 6 points plotted correctly	P2	Plotting must be correct to within half a square on the grid. FT for their cumulative decimals. Ignore joining points. P1 for 4 or 5 points plotted accurately, must be from cumulative results. Do not award if bars are drawn (unless <u>with</u> points plotted).															
(c) (Statement that Katie's claim is supported with) reason e.g. <u>best</u> estimate of the probability is 0.75, or <u>final</u> relative frequency value is 0.75.	E1  6	FT their final column entry in (a), provided clear reference is made to final value.															
9. $x \geq -1$ or equivalent $y \leq -x$ or equivalent	B1 B2    3	Accept '>' Accept '<'. B1 for $y = -x$ , $y > -x$ , $y \geq -x$ or B1 for $y \leq -kx (+0)$ , with $k > 0$ or B1 for $y \leq x$ .															
10. (a) $5.3 \times 10^{-8}$	B1																
(b) $6.19 \times 10^{12}$	B1 2																
11. Method to find the first variable Correct first variable Method to find the second variable Correct second variable	M1 A1 m1 A1 4	Allow one slip (but not in the equated variable).    $x = 0.5$ , $y = -3$															

