

QUESTION 2		
Code	Points to score	Marks
A <sub>1</sub>	Value of $\theta$ : $55^\circ \leq \theta \leq 62^\circ$ , 0 decimal places, check from the trace	1 + ½
A <sub>2</sub>	Value of $d$ : $55^\circ \leq d \leq 62^\circ$ , 0 decimal places, check from the trace	1 + ½
A <sub>3</sub>	Substitution into $W = 180^\circ - \theta - d$	½
A <sub>4</sub>	Value of $W$ : $58^\circ \leq W \leq 62^\circ$ , correctly calculated, 0 decimal places	1 + ½
		<b>5</b>
B <sub>1</sub>	Columnar table of $x, \alpha, \beta$ and $\alpha + \beta$ @¼.	1
B <sub>2</sub>	Units for the columns: (cm), ( $^\circ$ ), ( $^\circ$ ), ( $^\circ$ ) @¼	1
B <sub>3</sub>	Values of $\alpha$ decreasing: $34^\circ - 11^\circ$ @½	4
B <sub>4</sub>	Values of $\beta$ increasing: $9^\circ - 34^\circ$ @1	8
B <sub>5</sub>	Values of $(\alpha + \beta)$ correctly calculated @¼	2
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C <sub>1</sub>	Title of the graph: <i>A graph of <math>(\alpha + \beta)</math> against <math>x</math></i>	½
C <sub>2</sub>	Axes: Each axis drawn with an arrow in the increasing +ve direction of the plotted quantity. Each labeled with the quantity together with its unit.	1
C <sub>3</sub>	@½	
C <sub>4</sub>	Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values indicated ..... ½ + ½	1
C <sub>5</sub>	Plotting: Each point plotted as exactly as possible with a sharp pencil using a dot or cross (no shading), a star is not acceptable.	4
C <sub>6</sub>	@½	2
	Best curve with a minimum	1½
	Value of $m$ correctly read and $39^\circ \leq m \leq 41^\circ \Rightarrow$	1 + ½
		<b>10</b>
D <sub>1</sub>	Substitution into $\mu \sin \frac{1}{2}W = \sin \frac{1}{2}(W + m)$	½

D <sub>2</sub>	N correctly calculated and $1.50 \leq n \leq 1.60$ to 1 or 2 decimal places	1½
		2
<b><i>Total = 33</i></b>		