Question Number	Scheme	Marks
1.		
(a)	$\mathrm{E}(2\bar{X}) = 2\mathrm{E}(\bar{X}) = \dfrac{2(1+\alpha)}{2}$	M1
	$= 1+\alpha \neq \alpha$ (therefore $2\bar{X}$ is a biased estimator of α)	A1
		(2)
(b)	$\bar{x} = 6 \qquad 2\bar{x} - 1 =$	M1
	<u>11</u>	A1
		(2)
		Total 4
	Notes	
(a)	M1 for use of $2 \times \dfrac{1+\alpha}{2}$ A1cso correct comparison with α and no incorrect working seen. $\dfrac{1+\alpha}{2} \neq \alpha$ is M0A0	
(b)	M1 for attempt at $\bar{x}$ and use of $2\bar{x} - 1$ or ft use of their $\mathrm{E}(\bar{X})$ from part (a) to find an estimate for α A1 11 cao	