

5. Consider a single ray from the source to the mirror and let θ be the angle of incidence. The angle of reflection is also θ and the reflected ray makes an angle of 2θ with the incident ray. Now we rotate the mirror through the angle α so that the angle of incidence increases to $\theta + \alpha$. The reflected ray now makes an angle of $2(\theta + \alpha)$ with the incident ray. The reflected ray has been rotated through an angle of 2α . If the mirror is rotated so the angle of incidence is decreased by α , then the reflected ray makes an angle of $2(\theta - \alpha)$ with the incident ray. Again it has been rotated through 2α . The diagrams below show the situation for $\alpha = 45^\circ$. The ray from the object to the mirror is the same in both cases and the reflected rays are 90° apart.

