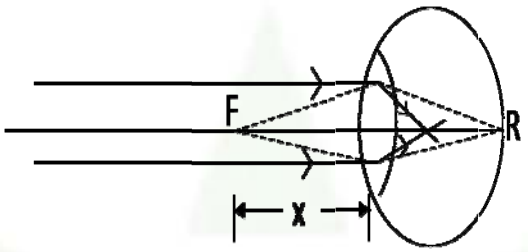
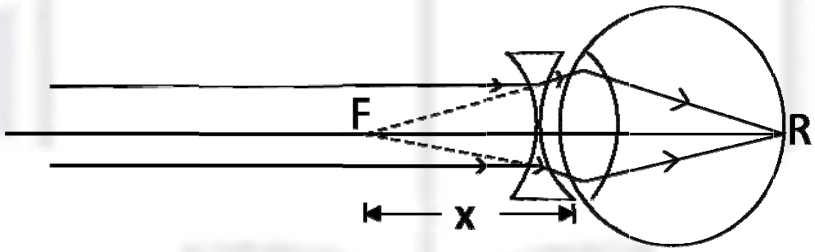
Myopia (Short sightness)

(1) Short sightness (Myopia): Short sighted people cannot see distance objects distinctly, due to some reason the normal (maximum) focal length of eye lens decreases i.e. the power of eye lens increases, hence parallel rays from distance object come to focus in front of the retina and this is why it can't be seen. As the object comes closer to the eye from infinity image shifts back and when object comes to F, the image falls at the retina and can be seen. Hence F is the far point for the defective eye.



Remedy: Since the normal power of eye lens has increased hence this defect can be corrected for, by using an auxiliary lens in front of the eye lens which will decrease the power of eye lens.



The auxiliary lens will for the image of the distant object at F and this image serves as object for eye lens produce image at the retina and thus the distant object can be seen.

Calculation: Let x = distance of the far point for the defective eye.

f = the focal length of the auxiliary lens

For the auxiliary lens: u=∞, v = -x

Using the formula for the lens: $\frac{1}{\infty}+\frac{1}{-x}=\frac{1}{f}$

$\therefore f=-x$

The negative sign indicates that the nature of the auxiliary lens is concave.