

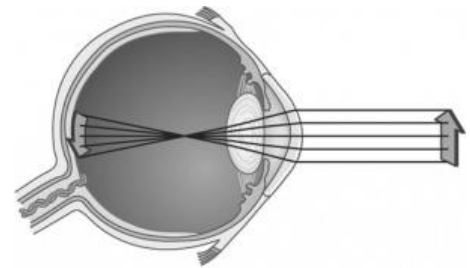
Answer on Question #60459, Physics / Optics

Discuss the significance of accommodation and convergence of human eye in respect of perception of light.

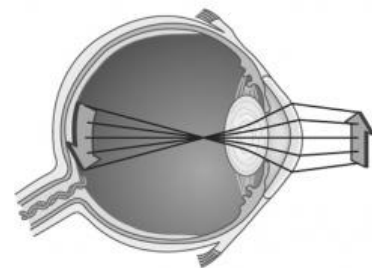
Solution:

Accommodation – adaptation of the eye to the clear vision of objects located at different distances from it. For a clear vision of objects need that the image always will fall on the retina. Accommodation of human eye occurs by changing the curvature of the eye lens (Figure 1), or change the distance to the retina.

Best distance vision (the distance from the object to the eye) for normal eye (when the muscles eye relaxed) is 0.25 m.

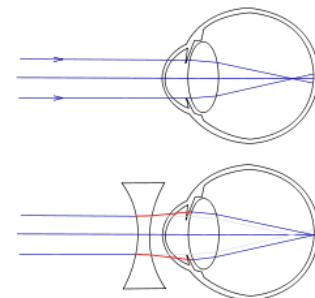


Distant image: lens is flattened



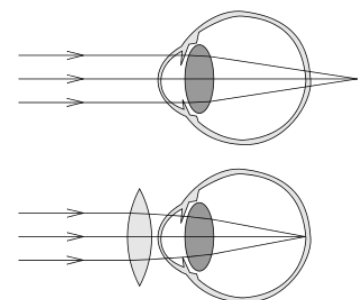
Close image: lens is rounded

Myopia, also known as near-sightedness and short-sightedness, is a condition of the eye where the light that comes in does not directly focus on the retina but in front of it (Figure 2). It does not affect focus when looking at a close object.



In the glasses for short-sighted people use the diverging lens.

Hyperopia, also known as farsightedness and longsightedness, is a condition of the eye where the light that comes in does not directly focus on the retina but behind of it (Figure 3). Causing the eye to not have enough power to see close or nearby objects.



In the glasses for far-sighted people use converging lenses.

Convergence — the construction of the axes of both eyes on the object. It provides the perception of the objects location in space (Figure 4). This allows determining the distance of the object.

In ophthalmology, convergence is the simultaneous inward movement of both eyes toward each other, usually in an effort to maintain single binocular vision when viewing an object. Convergence does to properly focus an image on the retina.

