

## **The optical defect of the vision (Hypermetropia)**

The types of vision defects can be classified as following

A normal eye can focus by accommodation on any object more than about 25 cm away. In cases where an eye cannot focus on an object, the image is formed either behind or in front of the retina, resulting in blurred vision. This can be caused by the eye being too short or too long.

### **Far-sightedness (Hypermetropia)**

A person affected by hypermetropia has an eye ball that is too short, making the distance from the lens system to the retina too small. This causes the image of near objects to be formed *behind* the retina. The near point of a hypermetropic eye is greater than normal.

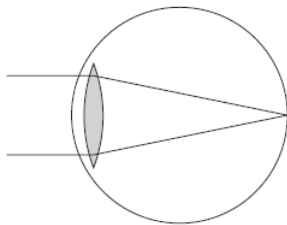
A hypermetropic eye can naturally focus parallel (or nearly parallel) rays from a distant object on the retina, but not highly divergent rays from a near object. Hypermetropia can be corrected using eyeglasses that have a convergent lens, which reduces the divergence of incoming rays.

A form of hypermetropia called presbyopia (old-sightedness) is not caused by the shape of the eye, but by a change in the crystalline lens: over time, the lens becomes more rigid, making it less able to accommodate to short object distances.

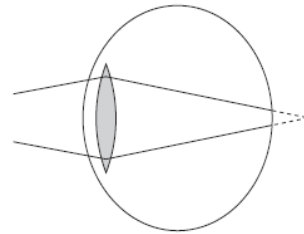
### **Procedure:**

#### Correction of Hypermetropia

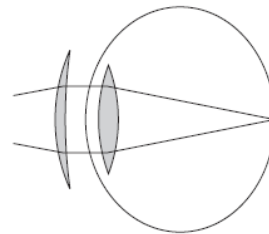
1. Place the eye model about 40 cm from the light source. Move the eye model as close as possible to the light source until you get a sharp image in focus.
2. To correct Hypermetropia find a lens that brings the image into focus by placing it in front of the eye in slot 1. Record the focal length of this lens.
3. Calculate its power in diopters



Normal Vision



Hypermetropia



Corrected Hypermetropia

**2. Hypermetropia ( far sight ):** eye ball is too short Image focused behind retina  
 Near point further than 25 cm.  
 Corrected with a positive lens (converging).

