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Accommodation power of the Human Eye

Apparatus: Eye model, lenses with different focal lengths, light source.

Theory:

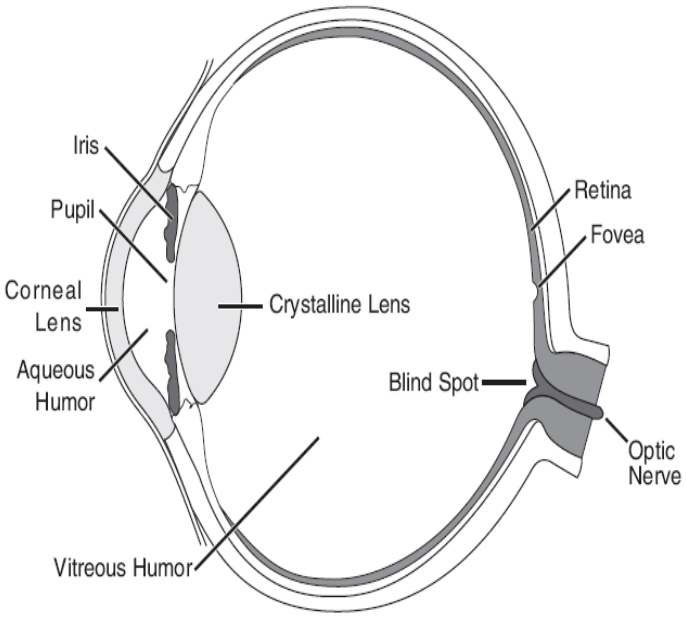
The human eye achieves vision by forming an image that stimulates nerve endings, creating the sensation of sight. Like a camera, the eye consists of an aperture and lens system (corneal lens and crystalline lens) at the front, and a light-sensitive surface at the back. Light enters the eye through the aperture- lens system, and is focused on the back wall.

The corneal lens and crystalline lens together act like a single, convergent lens. Light entering the eye from an object passes through this lens system and forms an inverted, real image on the retina, as shown in the below figure.

The total focal length of the eye *F* (which is also called as effective focal length) of this system can be given by:

1/F) = (1/U) + (1/V)…….1
v: Image distance, u object distance

Power (p) =1/F Diopter**……..2**



Horizontal Cross Section of the Human Eye

Procedure:

Determination *F* of eye model

1. Fill the eye model with water to within 1 or 2 cm of the top and place it about 40 cm from the light source.
2. Move the eye model as close as possible to the light source until you get a sharp image in focus. This point represents the **near point** of the eye model. Describe the image on the retina screen.
3. Calculate the effective focal length of the eye lenses system and its power using eqs.1 ,2