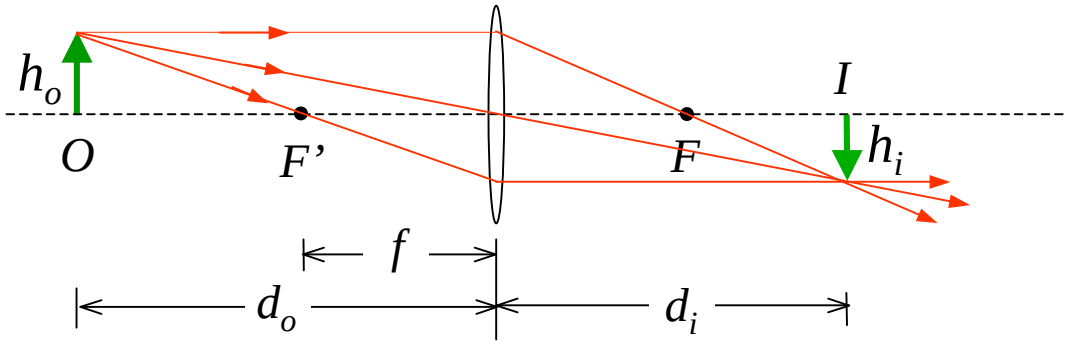
The Thin Lens Equation

- Assuming the object is located to the left of the lens:



$$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

Thin lens equation

$$m = \frac{h_i}{h_o} = -\frac{d_i}{d_o}$$

Magnification equation

- Sign convention (for single lens system)

f : + for converging lenses; - for diverging lenses

d_o : + for object located to the left of the lens

\- for object located to the right of the lens

d_i : + for real image formed to the right of the lens

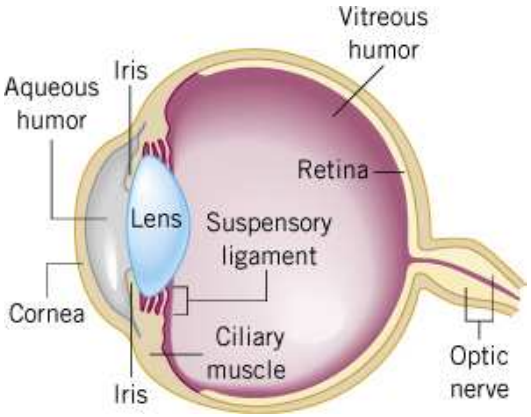
\- for virtual image formed to the left of the lens

h_o, h_i : + above principal axis; - below principal axis

Multiple Lenses

Solve n^{th} lense using thin lens and magnification equations
The image d_{iN} becomes the object d_{oN+1} for the $n+1^{th}$ lens

Human Eye (near perfect lense combination)



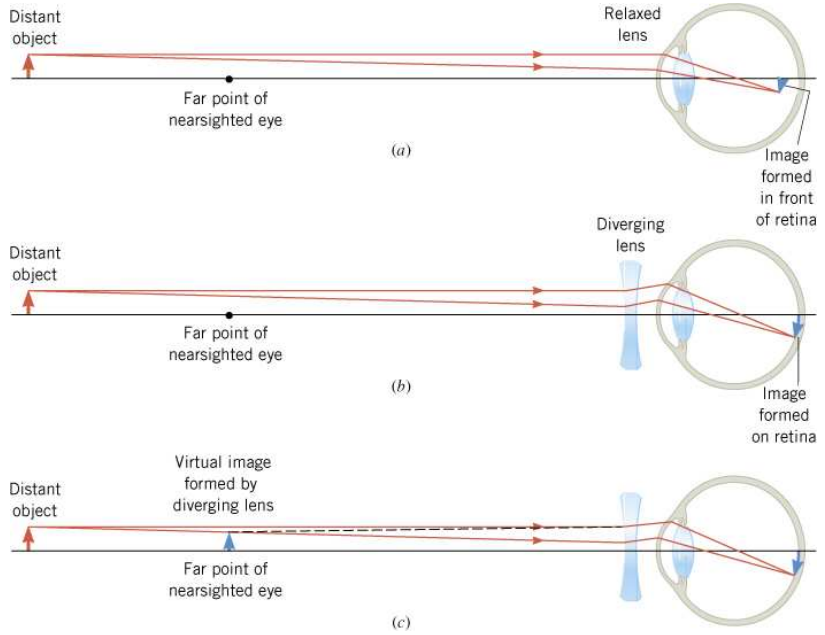
Accommodation –Eye Autofocus

Person with good sight

Near point N=25cm
Far point ∞

Nearsighted (Myopia)

Lens to Retina too long



Farsighted (Hyperopia)

Lense to Retina too short