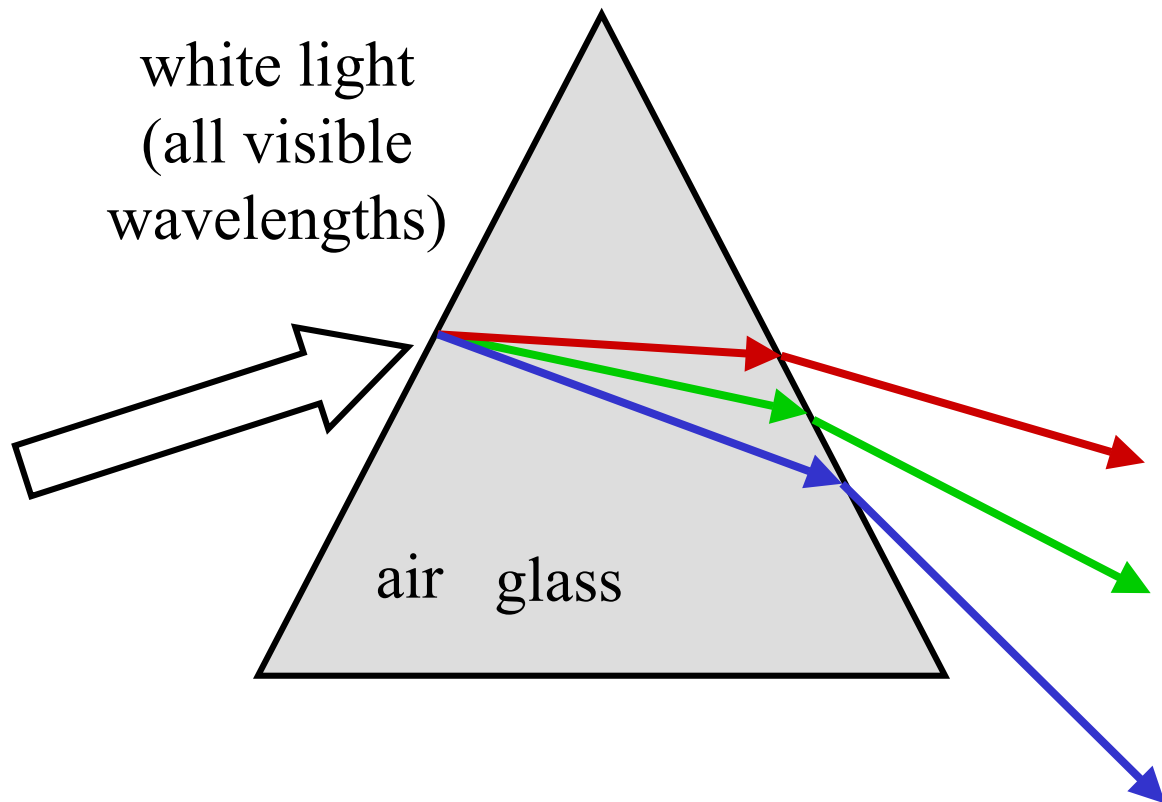


Prisms: Dispersion

Refractive index n is
function of the wavelength



Newton's prism

Dispersion measures

Reference color lines

C (H- $\lambda=656.3\text{nm}$, red),

D (Na- $\lambda=589.2\text{nm}$, yellow),

F (H- $\lambda=486.1\text{nm}$, blue)

Crown glass has

$$n_{\text{F}} = 1.52933$$

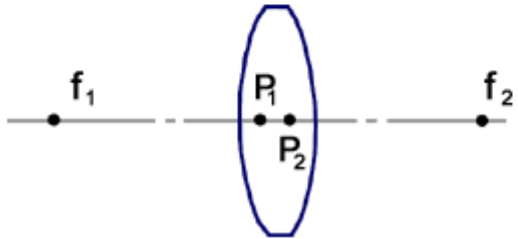
$$n_{\text{D}} = 1.52300$$

$$n_{\text{C}} = 1.52042$$

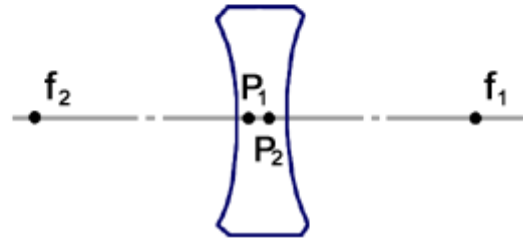
Dispersive power $V = \frac{n_{\text{F}} - n_{\text{C}}}{n_{\text{D}} - 1}$

Dispersive index $v = \frac{1}{V} = \frac{n_{\text{D}} - 1}{n_{\text{F}} - n_{\text{C}}}$

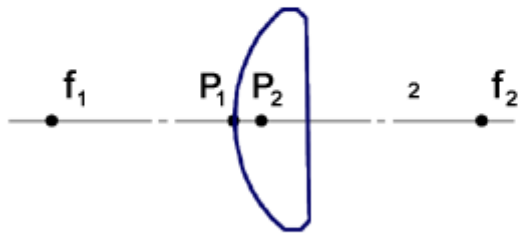
Various types of lenses



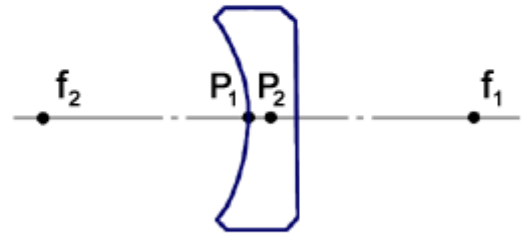
BICONVEX



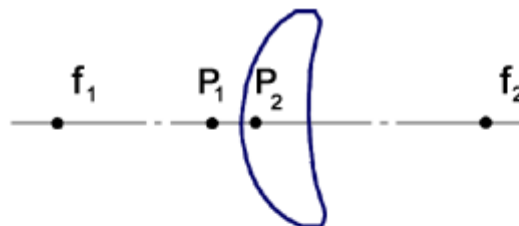
BICONCAVE



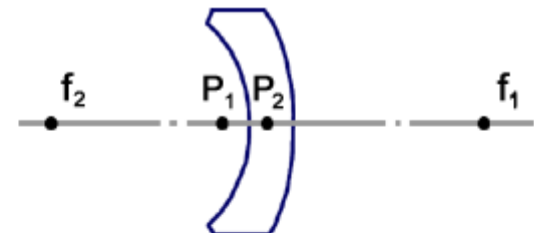
PLANO CONVEX



PLANO CONCAVE

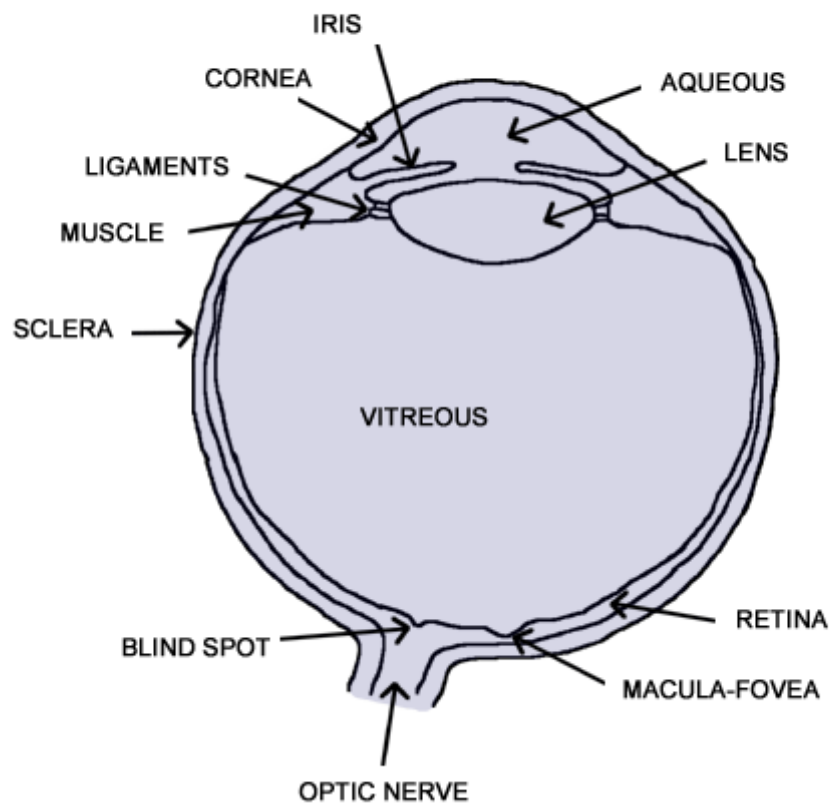


POSITIVE MENISCUS

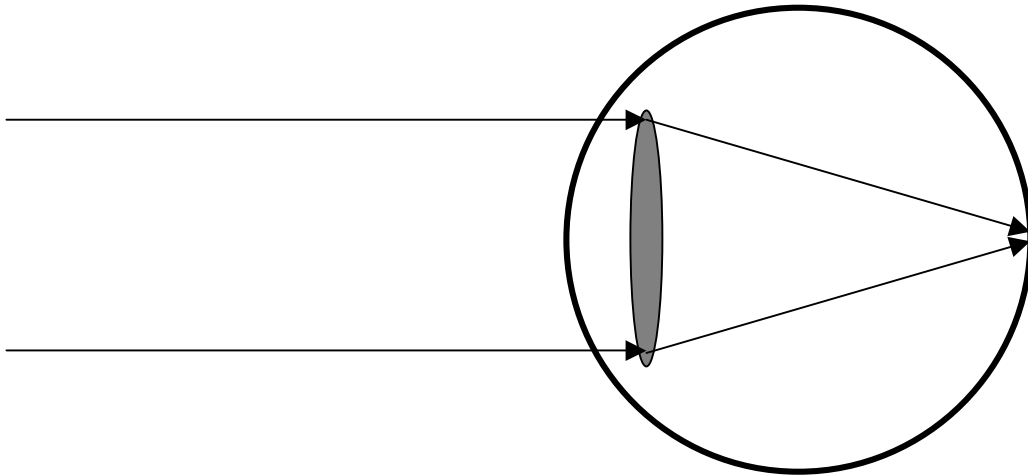


NEGATIVE MENISCUS

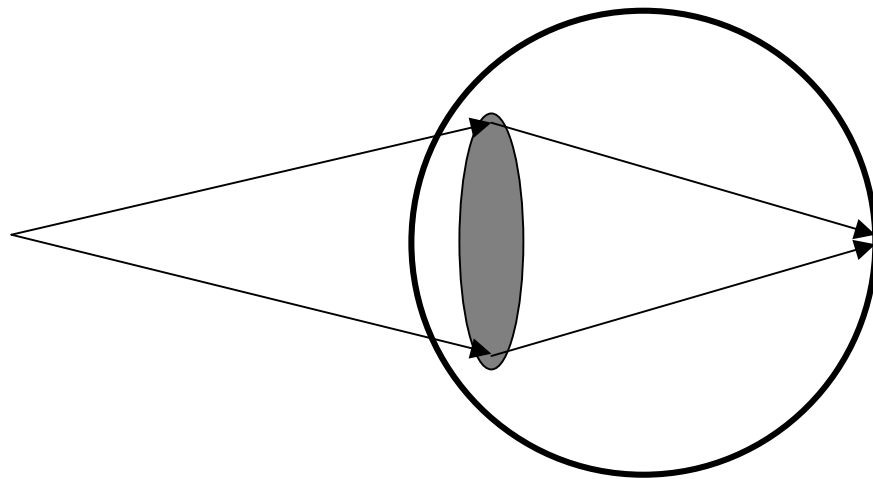
Anatomy of the human eye



Accommodation (focusing)



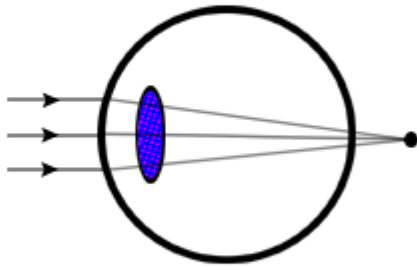
Remote object (unaccommodated eye)



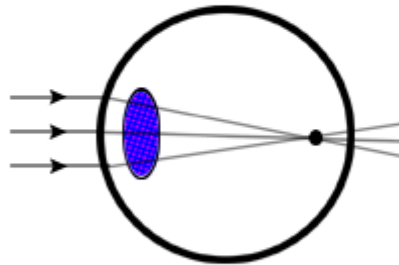
Proximal object (accommodated eye)

Comfortable viewing up to 2.5cm away from the cornea

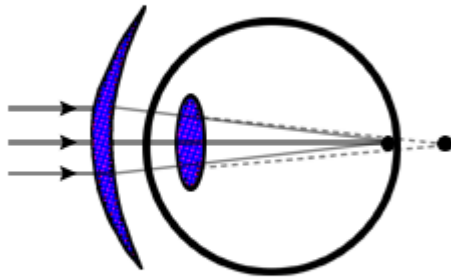
Eye defects and their correction



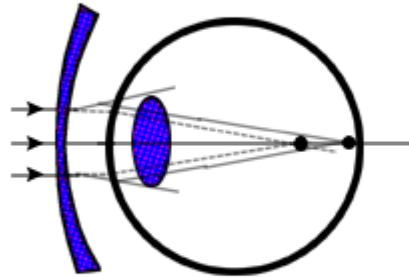
Hypermetropia, farsighted



Myopia, nearsighted

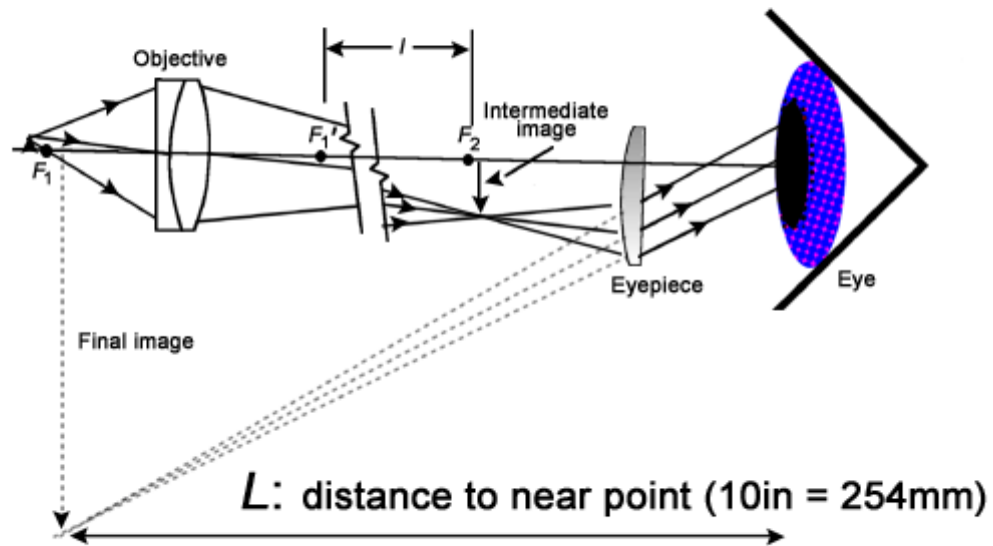


Farsighted eye corrected



Nearsighted eye corrected

The compound microscope

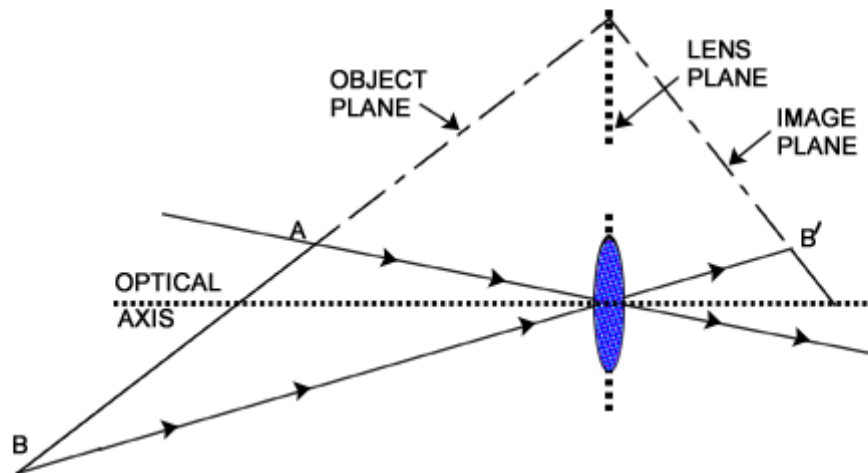


Objective magnification $M_O \approx -\frac{l}{f_O}$

Eyepiece magnification $M_E = \frac{L}{f_E}$

Combined magnification $M = M_E M_O$

The Scheimpflug condition



The object plane and the image plane intersect at right angles at the plane of the lens.