APPLICATIONS OF LENSES: THE HUMAN EYE

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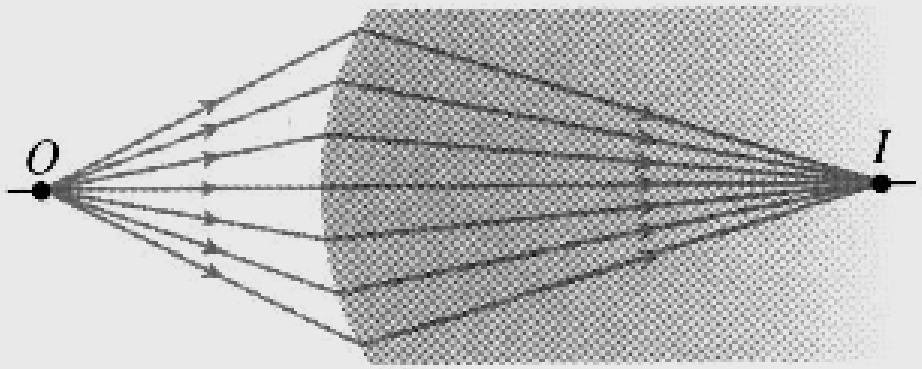
12/1/2010

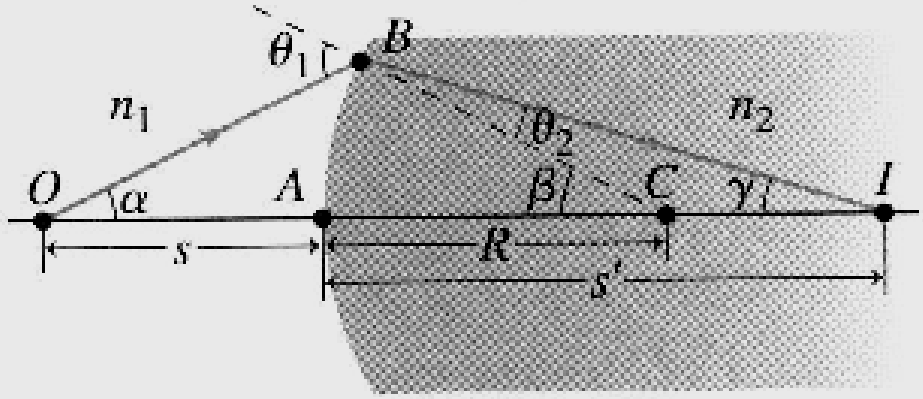
Supplementary Material for PHY1308 (General Physics - Electricity and Magnetism)

ANNOUNCEMENTS

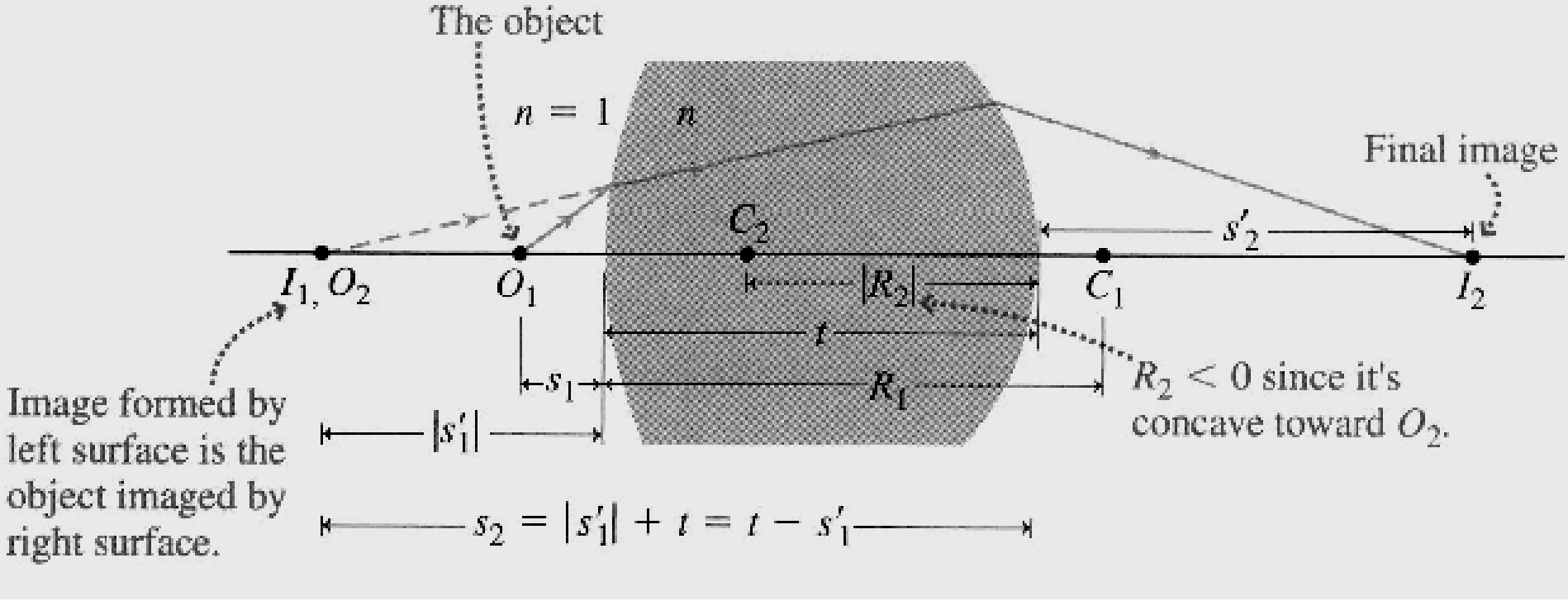
- Homework 14:
  - Due Monday, Dec. 6 by 5pm
- Quiz
  - in-class, Friday (last one!)
  - covers material from homeworks 12 and 13
  - "flying solo" - no teams on this one

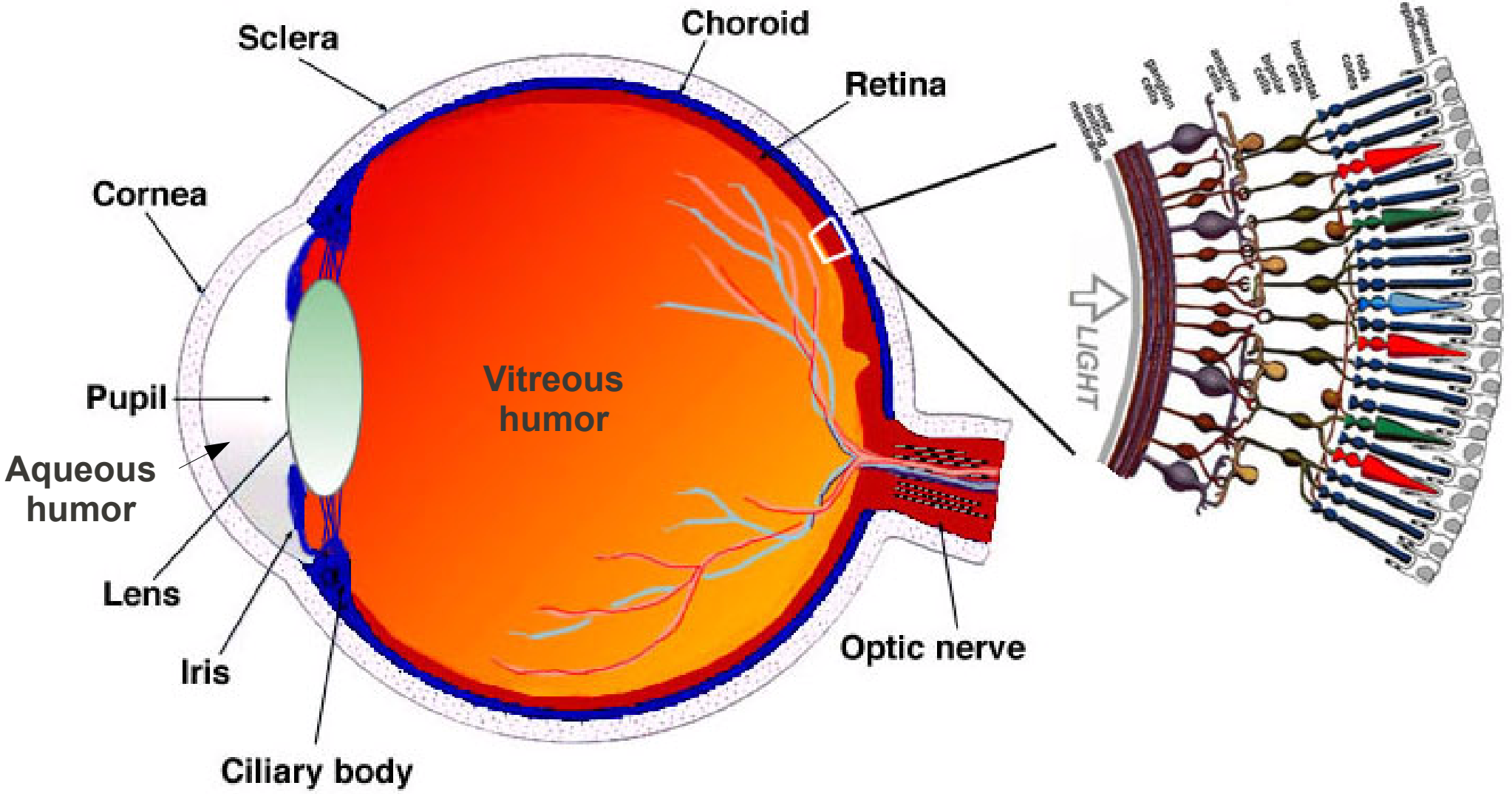


(a)

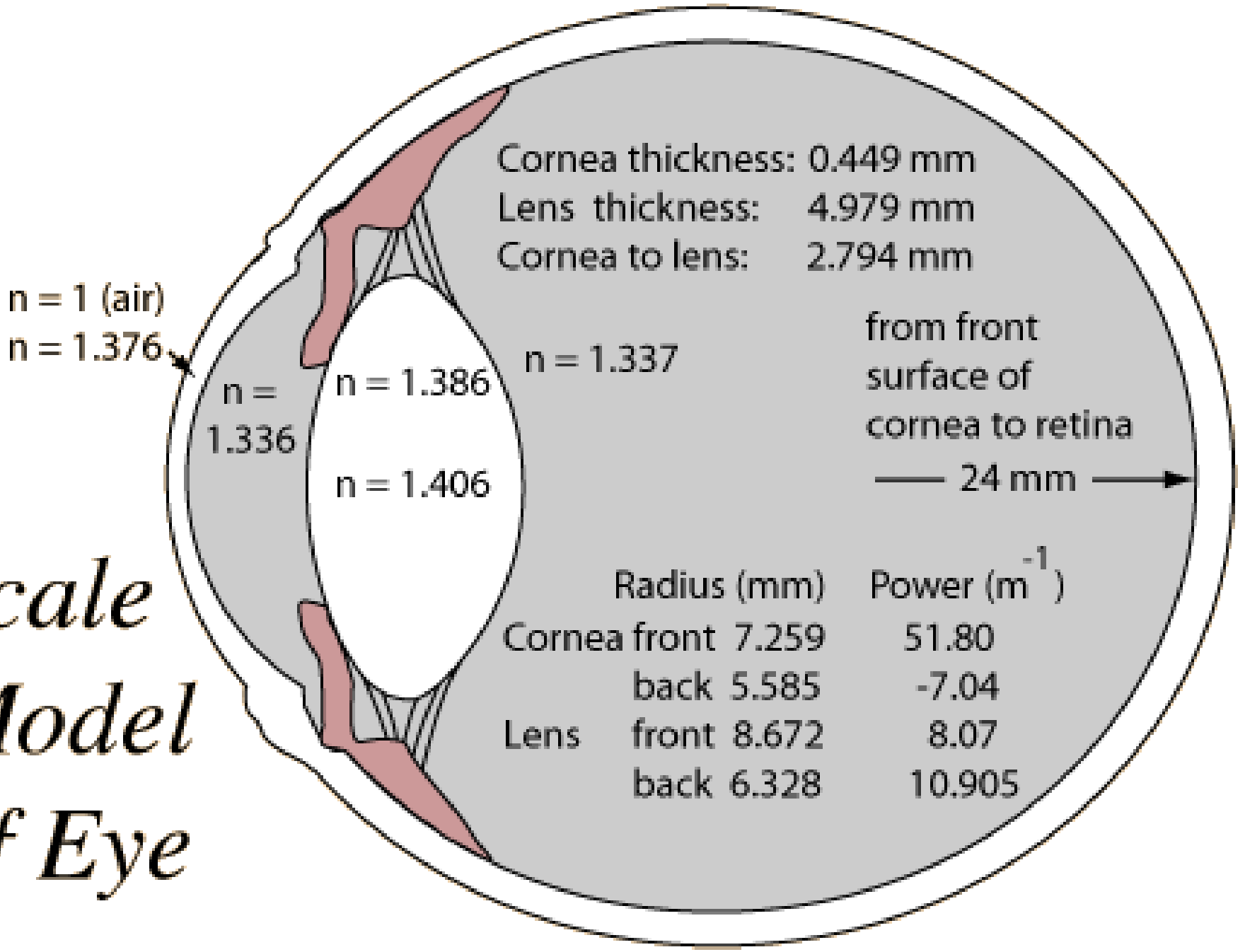


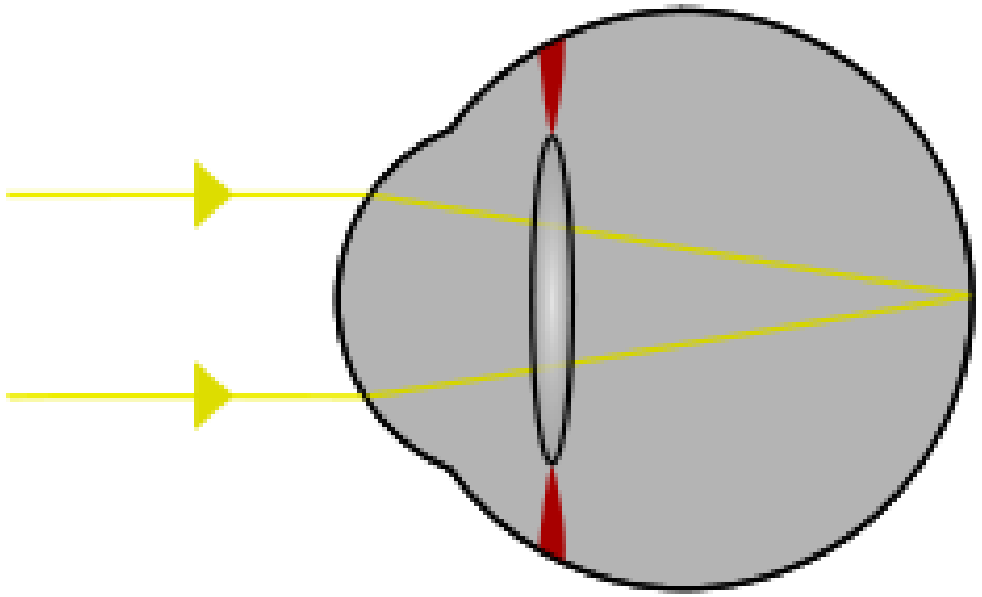
(b)

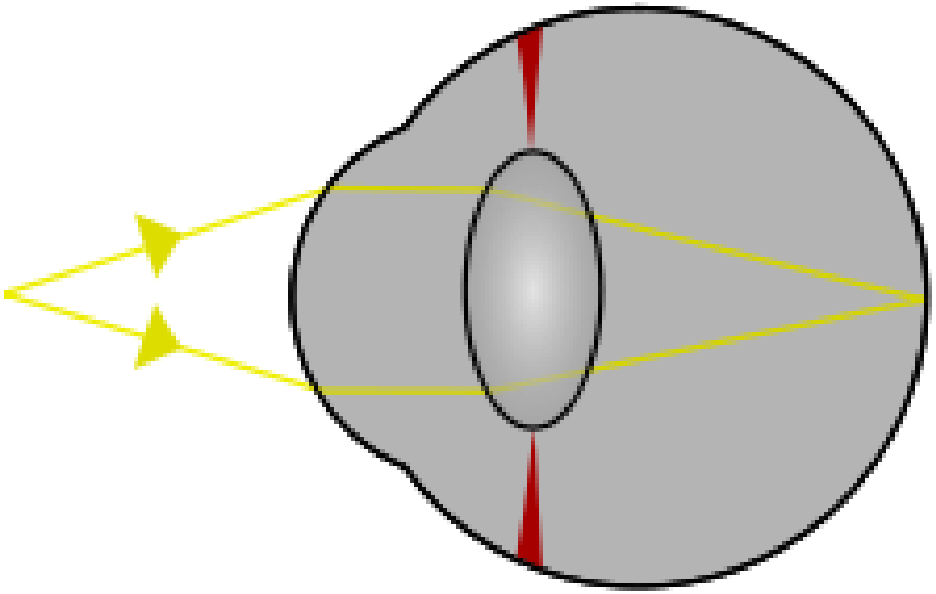

The object
$n = 1$
n
Final image
C_2
s'_2
I_1, O_2
O_1
$|R_2|$
C_1
I_2
t
s_1
R_1
$R_2 < 0$ since it's concave toward O_2.
Image formed by left surface is the object imaged by right surface.
$|s'_1|$
$s_2 = |s'_1| + t = t - s'_1$


Sclera
Choroid
Retina
Cornea
Pupil
Vitreous humor
Aqueous humor
Lens
Iris
Ciliary body
Optic nerve
LIGHT

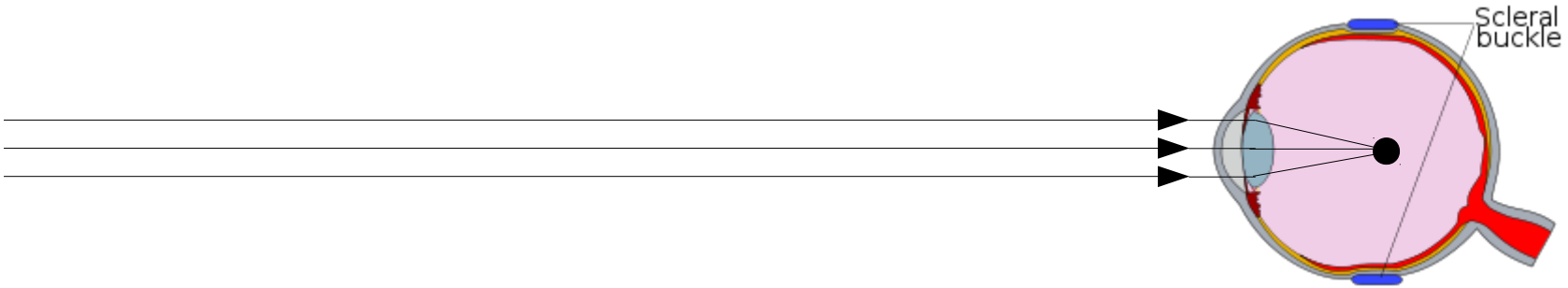
Scale Model of Eye



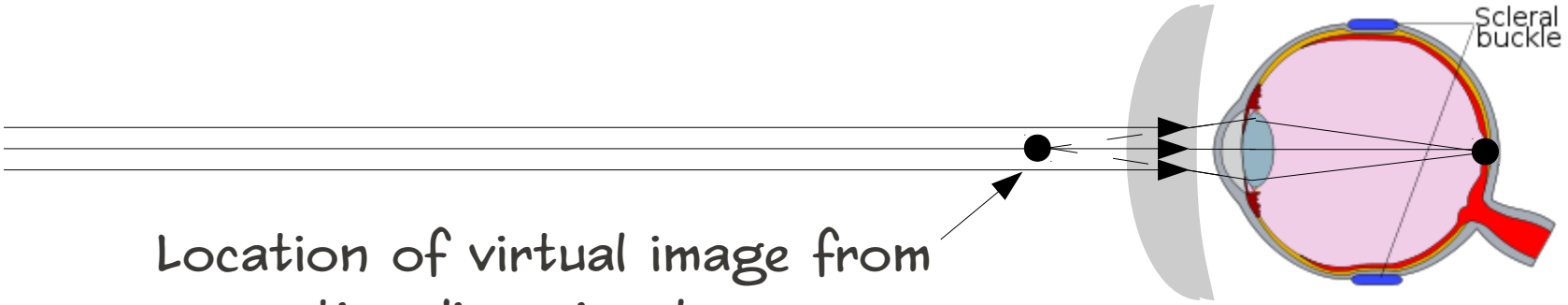




Near-sighted: cannot see distant objects



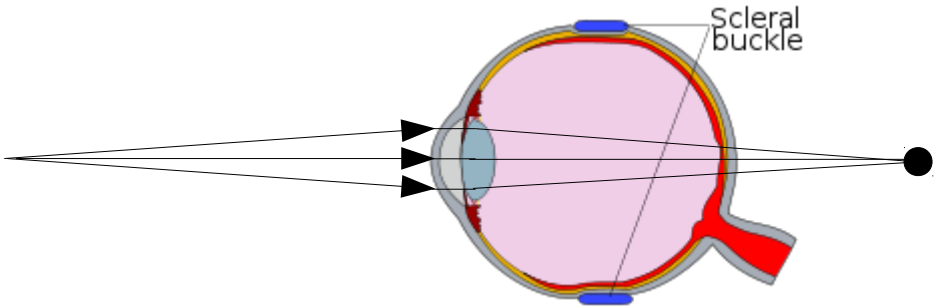
Near-sighted: corrective optics



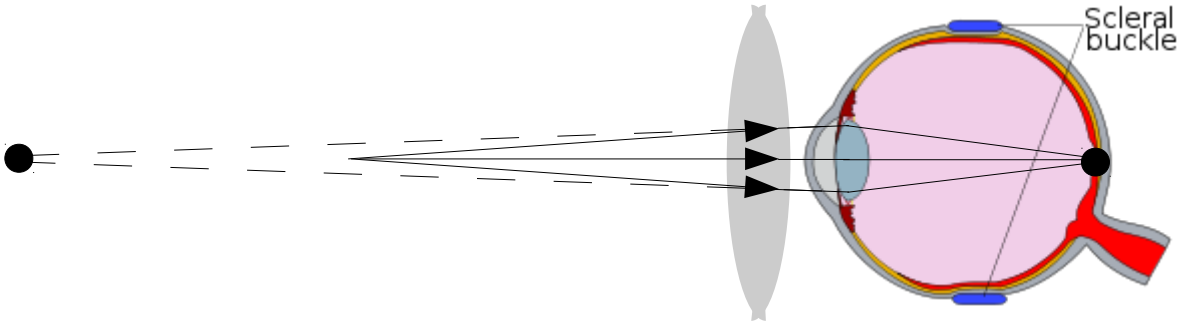
Location of virtual image from corrective diverging lens ($s'<0$), which the eye can then see

Near-sighted individuals need corrective optics that make objects look closer than they actually are so that the eye can focus on them.

Far-sighted: cannot see close objects



Far-sighted: corrective optics



Location of virtual image from corrective converging lens ($s' < 0$), which the eye can then see. Virtual image is further away than object.

Far-sighted individuals need corrective optics that make objects look further away than they actually are so that the eye can focus on them.

LASIK

(laser-assisted in situ keratomileusis)