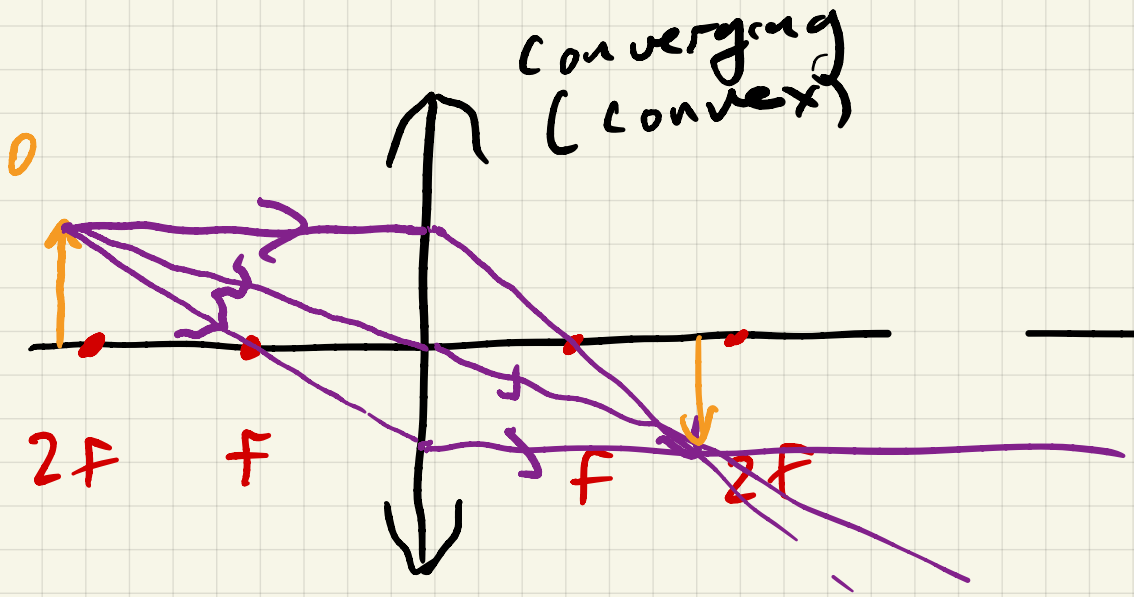
Physics 213 lecture 10

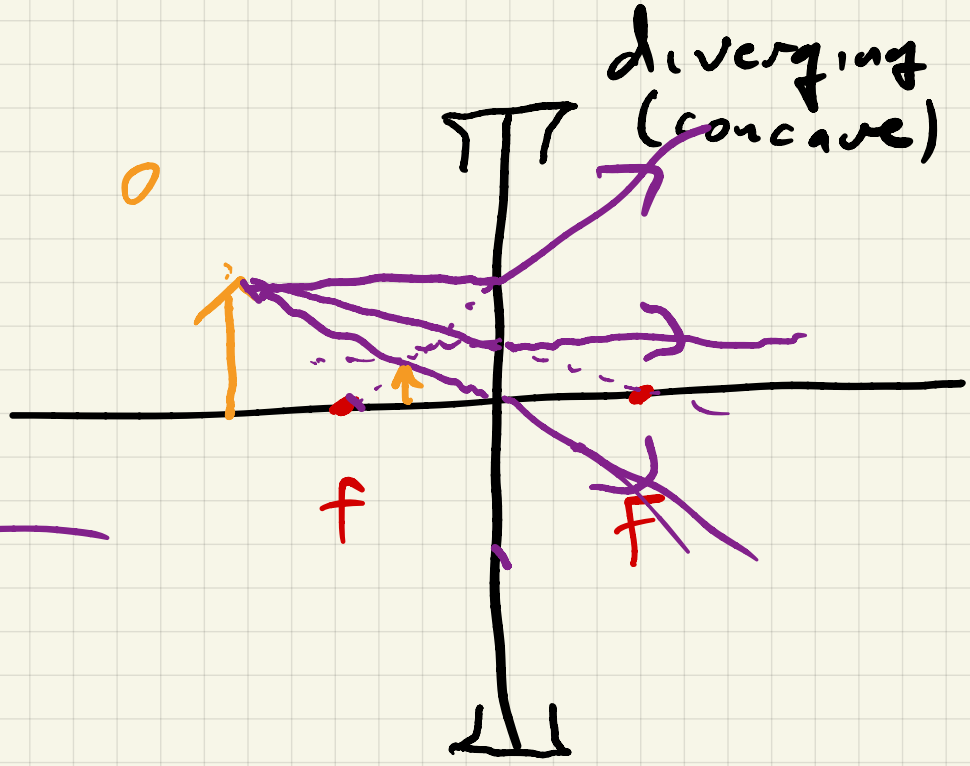
# Physics 213 Lecture 10 9/15/21

- Lab
- Quiz Friday
- HW 2 posted today
- record

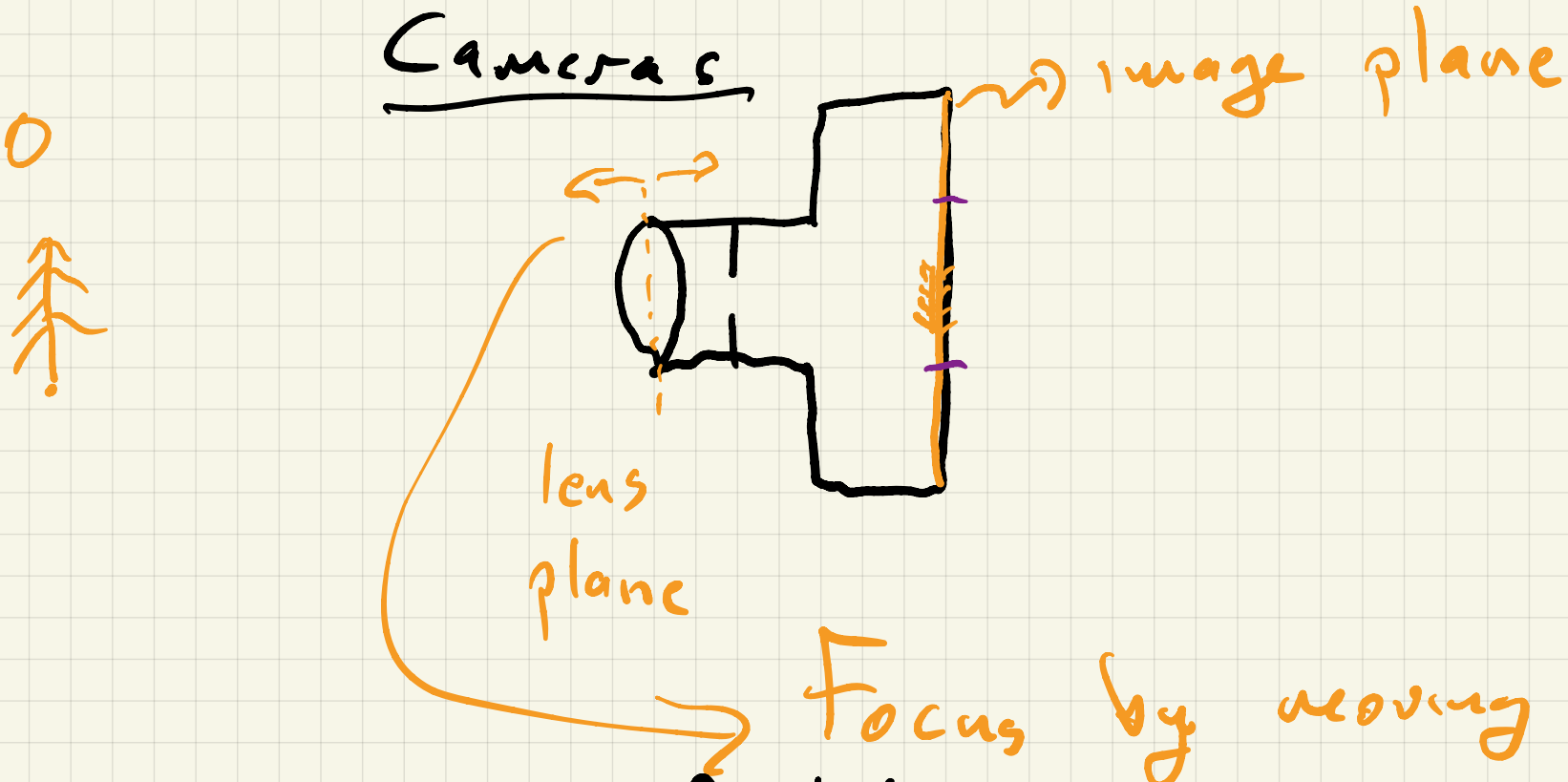
?? Cheating ??

Today: Optical inst., camera, eye, microscope & telescope



# Cameras




Focus by moving lens → f

$F_{number} = \frac{f}{D}$ → focal length

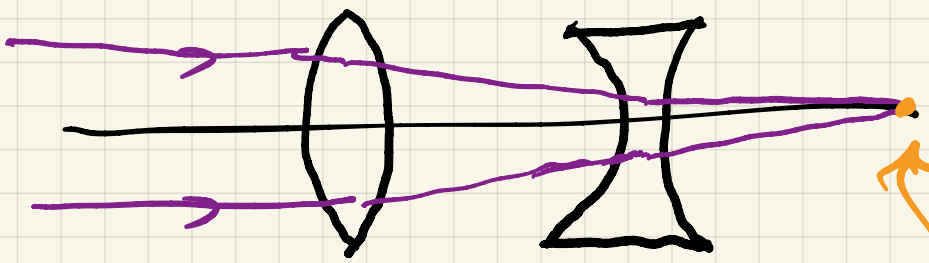
2) diameter

smaller $f_\#$ is more light

(f stop)

$M = \frac{s'}{s}$ $\quad s' \sim f \Rightarrow M = \frac{f}{s}$ $\quad \uparrow F \uparrow M$

# Zoom lenses

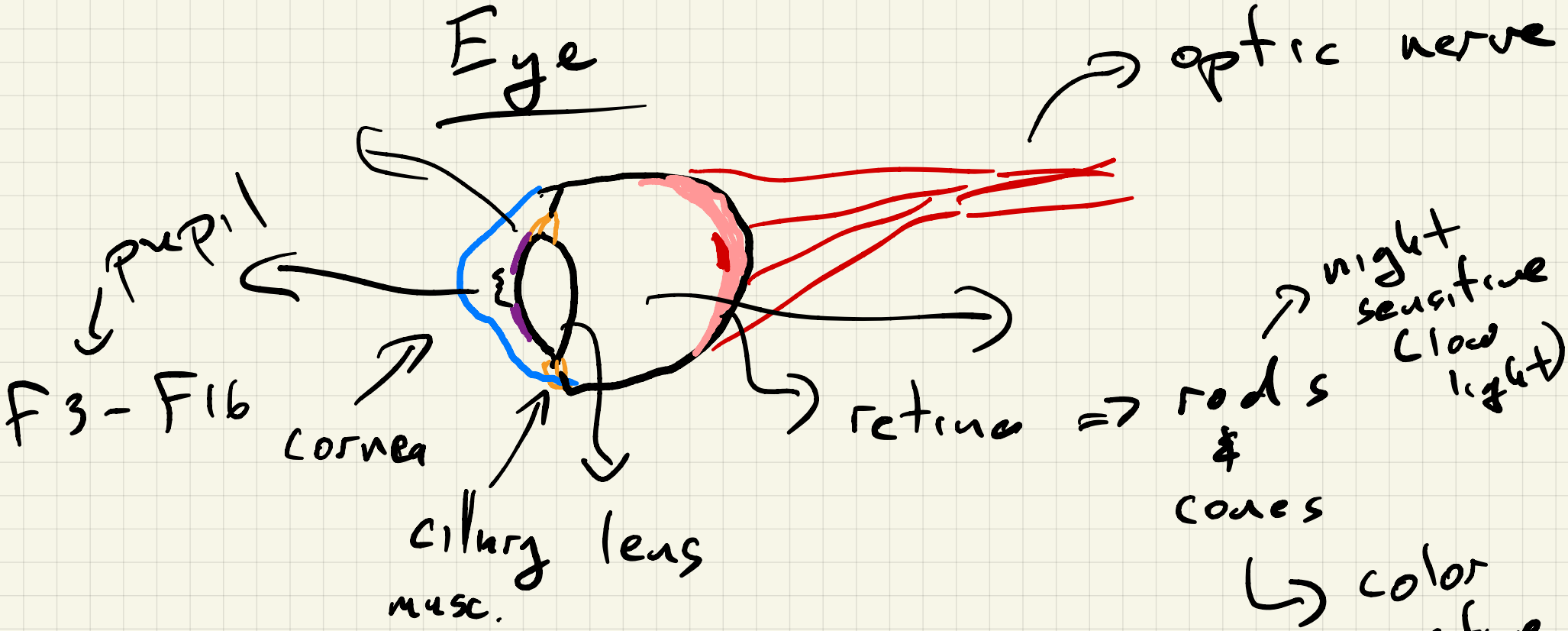


effective focal pt

lenses closer together ⇒ longer effective focal length

lenses farther apart ⇒ shorter effective focal length

# Eye



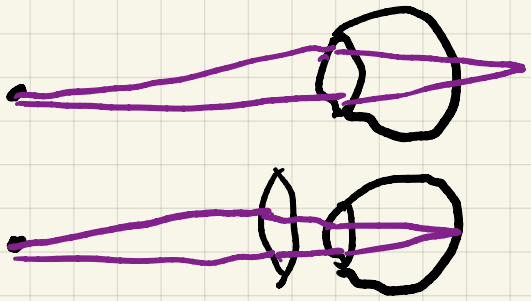

$f \sim 1.7$ cm

most bending of light happens at cornea interface

lens is used for adjustment of focus

far sighted ⇒ near objects focus behind retina
(hyperopia) (short eye)

correct with converging lens



typical near pt.
~25 cm (young people)

near sighted ⇒ distant objects focus in front of retina
(myopia) (long eye)

correct with a diverging lens