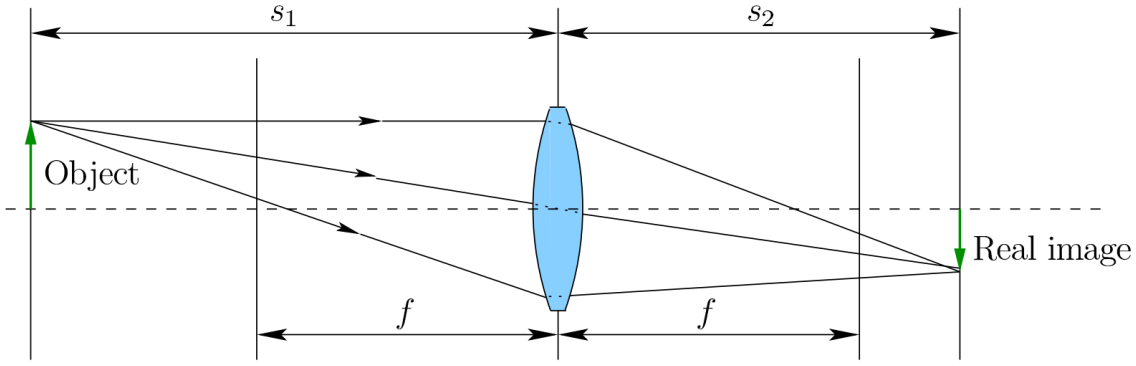
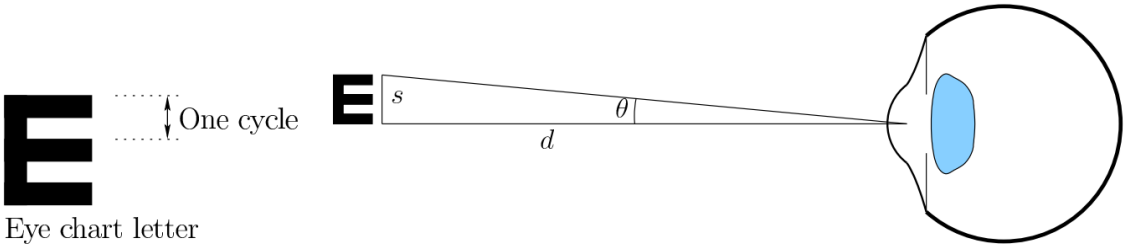
CS 498VR: Virtual Reality
In-class Worksheet: Optics

Optics

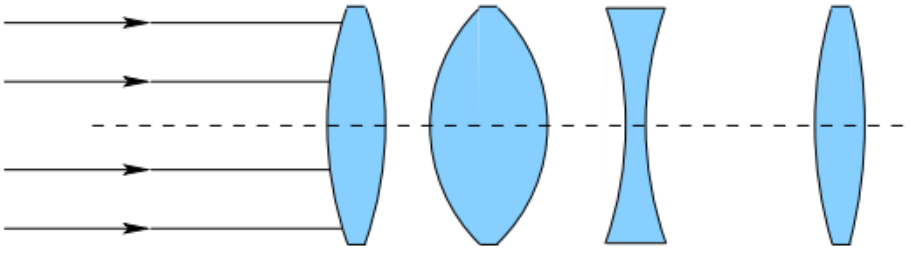
1. Suppose an object is placed 5m away from a lens for which the focal length f = 1m. At what distance from the lens should a screen be placed so that the image is in focus? Or is it not possible for the object to be in focus?



2. Suppose a person with 20/20 vision is viewing a screen 1.5 inches away. If the display must be able to render 30 cycles to have acceptable resolution, how many pixels-per-inch (PPI) are required?



3. The optical power of a lens can be expressed in D diopters, where D = 1/f when f is the focal length in meters. The optical power of an array of lenses can be computed by summing up the diopters of each lens in the array. What is the combined focal length of the array below?



$$2 + 5 + -2 + 1$$