Last Name (print)_____ First Name (print)_____
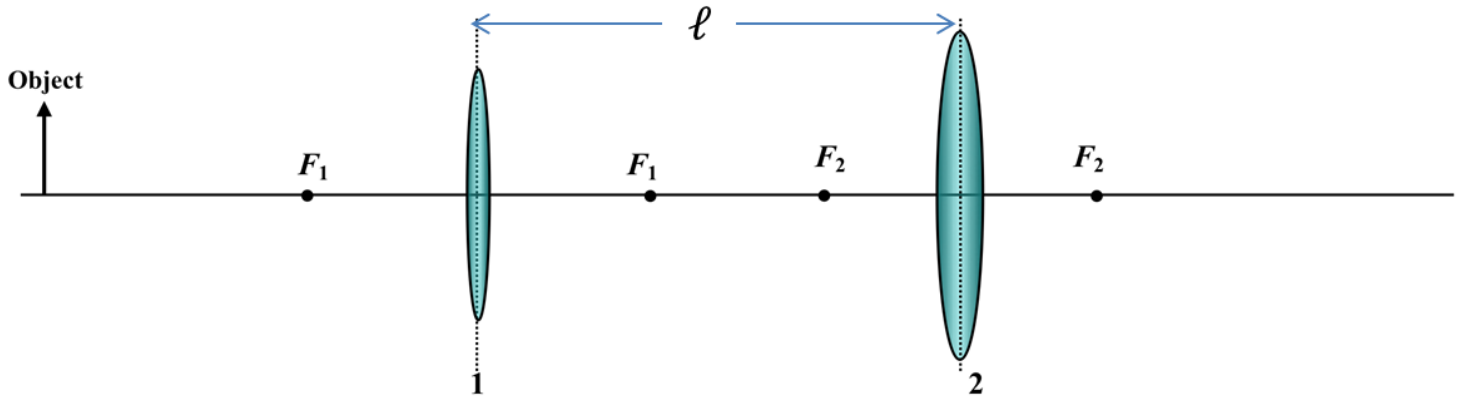
PHYS 2112- Take Home Quiz- Optics

➜ ➜ **Due on** **Friday, Nov. 1** in class

An object is located to the left of a compound lens system consisting of two converging lenses (lens 1 and lens 2). The focal lengths of the two lenses are shown in the diagram below.

(a) Sketch the principal rays for the compound lens system on the diagram above.

 (b) Using your sketch as a guide, circle all of the adjectives that describe the final image.

Real	Upright	Reduced
Virtual	Inverted	Enlarged

(c) Assuming that lens 1 has focal length $f_1 = 20.0$ cm and that the object is a distance $p_1 = 2.50f_1 = 50.0$ cm, find the imaged distance i_1 for the image produced by the lens 1.

(d) Assuming that lens 2 has focal length $f_2 = 16$ cm and that lens 2 is $\ell = 56.0$ cm from lens 1, find the image distance i_2 for the image produced by the second lens.

(e) What is the magnification of the image that is produced by the compound lens system?

*FOR FULL CREDIT: Show **all** relevant work and commentary.* **All** *numerical values must include appropriate units, not just the final answer. Use extra paper if necessary.* **Staple all of your work together for submission**. *(*When in doubt, write it out.)*