Name_____

Phys 2020 (NSCC), Spring 2008
Problem Set #9

1. Find the critical angle for light passing from quartz (index of refraction 1.458) into air.

2. Find the critical angle for light passing from flint glass ($n = 1.66$) into water ($n = 1.33$). (Recall this is the incident angle at which the refracted beam goes at 90° from the normal.)

3. A converging lens has a focal length of 20.0 cm. Locate the images for object distances of (a) 40.0 cm, and (b) 10.0 cm.

4. For each case in problem 3 state whether the image is real or virtual, upright or inverted and find the magnification.

5. An object is 2.0 cm in front of a converging lens. The magnification of the image is +2.0. Find the location of the image and the focal length of the lens.

6. A lens forms a real image with a magnification of $\frac{1}{3}$ when the object is located 9.0 cm from the lens. What kind of lens is this and what is its focal length?

7. An object which is 10 cm high is located 28 cm from a diverging lens of focal length -7.0 cm. Describe fully the image.

8. A projection lens is employed to produce pictures 2.4 m$\times$3.2 m from slides 3.0 cm$\times$4.0 cm on a screen 25 m from the lens. Compute its focal length.