Physics 123 section 2 Identification number_____
Lab #7
Telescope

In this lab, you will construct a simple telescope using two lenses. Mount the source (illuminated arrow) and the screen on the optical bench, and mount one of the lenses between them. Adjust their positions until a real image of the arrow is focused on the screen. Measure p and q. Calculate f from the thin lens equation,

$$\frac{1}{f} = \frac{1}{p} + \frac{1}{q}.$$

Repeat for the other lens. Record your results below.

Construct a telescope by mounting the two lenses a distance $f_1 + f_2$ apart. Use the lens with the smaller focal length for the eyepiece. View the large scale mounted on the wall across the room. The distance between the two lenses may be adjusted to bring the image into better focus.

Measure the angular magnification m of the telescope by viewing the scale through the telescope with one eye and looking directly at the scale with the other eye. In this way, you ought to be able to see both the magnified and unmagnified scale superimposed on each other. Finally, calculate m from the measured focal lengths.

	lens 1	lens 2
$p =$	_____	_____
$q =$	_____	_____
$f =$	_____	_____

$m =$ _____ measured

$m =$ _____ calculated