

Name \_\_\_\_\_

Lab Partner(s): \_\_\_\_\_

Date Performed: \_\_\_\_\_

Date Due: March 4, 2014

Physics 111 Laboratory

Experiment #5

Geometric optics

*Attach your fully labeled and captioned data tables for each part along with any fully labeled and captioned graphical representations of your data that you may have created to the end of this handout.*

***Honor Code Statement:***

1. What assumptions do you need to make to perform this experiment?

2. From your plot, what are the focal lengths of the converging lenses? How do they compare with the values  $f_A = 127\text{mm}$  &  $f_A = 252\text{mm}$ ? On your plot, are the lenses “stacked” as you would expect?



5. From your scale drawing using the actual value of the focal length of the diverging lens, measure (from the converging lens) the location of the real image that was produced and how does this number correspond to what you actually measured? Comment on your results? If the two values are not reasonably close to each other, explain why they are not.

6. Describe your procedure that you used to determine the size of the light bulb filament. From this procedure, what is the size of the light bulb filament? Show all of your calculations below. How reasonable is the value that you determined? Explain.

7. Derive the relationship that you used to determine the focal length of the converging lenses that relates the variables  $D$ ,  $s$  and  $f$ . What is the average value of the focal length  $f$  for each of your converging lenses? How do these values compare to the values you found from your graph and to the values given in question 2 above?