**Experiment 3 lens**

**In this experiment you will determine the focal length of a converging lens by magnification method.**

 lens

 bulb screen

 u

 v

1. Determine an approximate focal length, f of the lens.
2. Arrange the screen, the lens and the illuminated object as shown in the diagram above.
3. Starting with an object distance, u of 1.5f, where, f is the approximate focal length of the lens, adjust the position of the screen until a sharply focused image of the illuminated object is obtained on the screen.
4. Measure and record the object distance, u and the image distance, v.
5. Repeat the above procedure(s) for u = 2.0f, 2.5f, 3.0f, 3.5f, 4.0f, and 4.5f.
6. Tabulate your results of u and v, including values of, m where, m = v/u.
7. Plot a graph of m against v.
8. Determine the slope, S of your graph.
9. Determine the value of focal length, f of the lens from the expression, Sf = 1.
10. Determine the intercept, c of your graph. From your graph determine the value of, v when m = 1. (call this value v0).
11. Find the ratio of v0 to f (the focal length obtained in (i) above and the ratio of c to f). Comment on the two ratios obtained.