# Option C – Practical 1

## *Determination of magnification using an optical bench*

### Safety

Wear safety glasses. Light source might get hot – avoid touching.

### Apparatus and materials

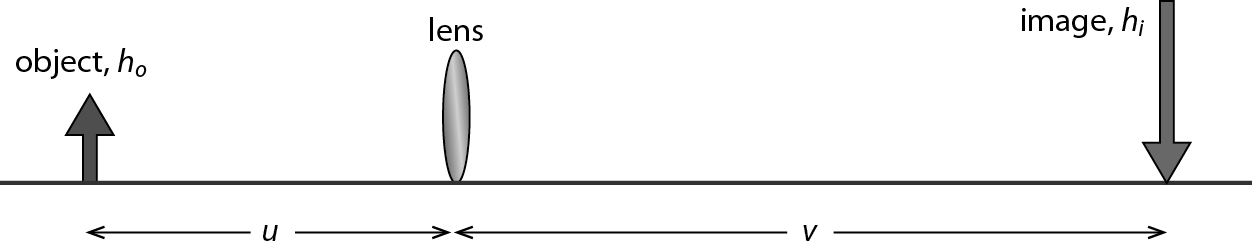
* optical bench
* light source
* object
* lens
* screen

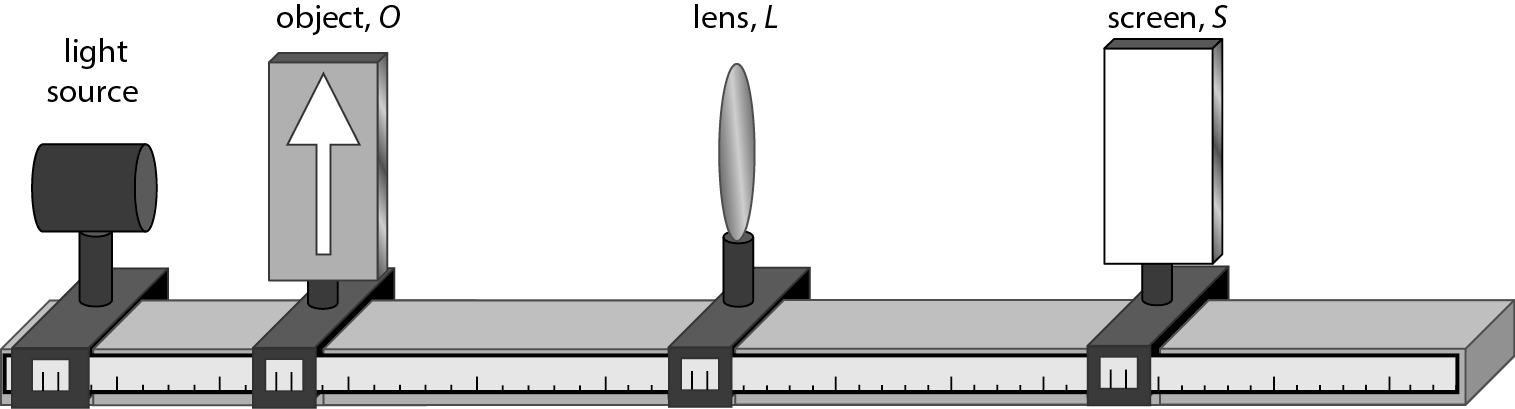
### Introduction

In this experiment you will determine the magnification using an optical bench.

When an object of height *h*o is at a distance *u* from a lens and an image of height *h*i is formed at a distance *v* from the lens, the magnification can be calculated by:

Magnification





### Procedure

1. Measure the height of object, *h*o.
2. Set the optical bench as shown in the diagram above.
3. Place the lens 15 cm away (*u* = 15 cm) from the object. Move the screen until the image is focused (the image is clear).
4. Measure the height of the image *h*i and the distance of the screen from the lens *v*. Record the measurements of *u*, *v* and *h*i in a table.
5. Calculate the magnification first using and then using . Add two more columns to

the table and record these values.

1. Repeat steps **3**–**5** four more times, increasing *u* by 5 cm each time.

### Questions

* 1. Do you get the same value for the magnification when using and ?
  2. Determine the focal length of the lens using the lens equation.