

EY
April 22, 2010
Lab 14

Introduction

In our lab, we were trying to determine the index of refraction for the louver glasses. My partner and I came up with an idea that we would need a coin, louver glasses, and a meter stick. We start out on our experiment by placing a coin or quarter on the table and then start by piling the 0.5 width louver on top. The louvers were cut into 10 cm long, so we used only 7 from it to do our lab. While the coin was placed on the table, we measured the object depth and the image depth. The object depth refers to the image of the object in its original position or the actual image of where it is. The image depth refers to the image of an object when you see it differently than the actual depth. On top of the coin was a 0.5 louver glass which enables us to figure out the image depth and the object depth. When we first placed the coin on the table, we start by measuring the object depth from the bottom to the top of the louver glasses. We then measured the image depth where we thought the coin might be according to how it appeared to us.

Equipment

- 7 louver glasses
- Meter stick
- Coin-(quarter)

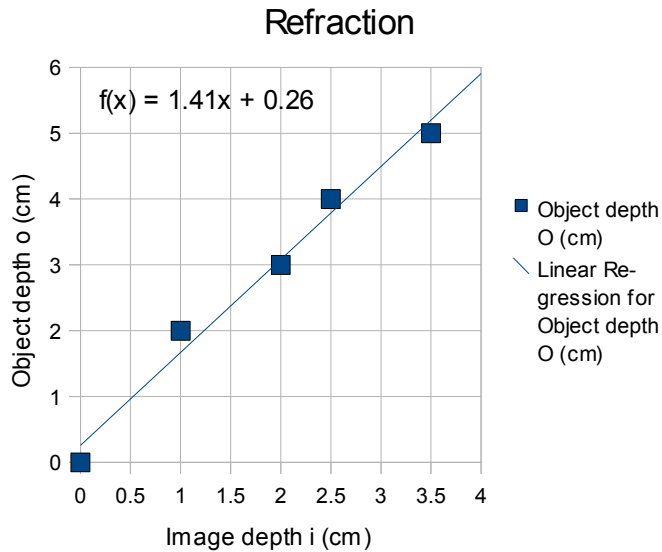
Procedure

We start by placing a coin on the table then placing two 0.5 cm louver glasses on top of it. After we placed the first two louver glasses, we measured the object depth 2 and then the image depth 1. We recorded our data down then added up four 0.5 cm louvers again. We kept on doing this same procedure but the number of louver glasses added keeps on increasing. As shown in the table below, we stopped on 7 louver glasses which equals to 0.5cm louver glasses that was added up on top of the coin. The coin or quarter does not move but just stay at the bottom while the louver glasses keeps on adding up. Finally, we recorded all our data down when we were done with measuring the image depth and the object depth.

Data Table

| Image depth I (cm) | Object depth O (cm) |
|--------------------|---------------------|
| 0 | 0 |
| 1 | 2 |
| 2 | 3 |
| 2.5 | 4 |
| 3.5 | 5 |

Data Chart



Analysis

- The slope of the linear line is 1.41
- The y-intercept is 0.26
- The mathematical relationship between the points on the refraction table is linear
- The percentage difference for the refraction is 0.06 or -0.06%
- The coefficient determination of the graph is 0.98 which showed that our graph is 98% accurate.
- The zero are entered into the table to help the line of the chart more accurate

Conclusion

We found out in our lab that we can easily check the index of refraction just from pieces of luvver glasses piling up on a coin and measuring it with a meter stick. The line of our graph is a linear relationship because the points seem to line up on the line. We also found out that the slope of our line is 1.41 and the y-intercept is 0.26. The number of pieces of luvvers that we piled onto the coin increases the number of image depth. Also, there is mathematical relationship between the actual depth of an object and the apparent depth of an object. The slope of the refraction is one which proved the theory that object distance 0 equals image depth i .