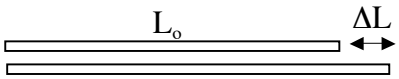
***Name*_____**

Coefficient of Linear Expansion

Introduction

The linear expansion of a heated solid or liquid can be measured by a quantity α, the coefficient of linear expansion. This coefficient is defined in such a way that it measures the percentage change in the length per degree temperature change.



$$\alpha = \frac{\Delta L}{L_o \Delta T}$$

The coefficient varies with different materials. The purpose of this lab is to use the formula stated above to determine the coefficient of three materials with a specially designed apparatus.

Procedure

Draw a diagram of the apparatus, labeling all major features

Describe how it works

Record measurements in Table 1. Calculate α on the next page and record your findings in the table.

L_o (cm)	ΔL (cm)	Ti(° C)	Tf(° C)	ΔT(° C)	α	Metal?

Table 1: Measurements to Determine the Coefficient of Linear Expansions for Three Metals

***Name*_____**

Sample Calculations:

Questions

1. *Explain how linear expansion of metal rods could be used as a thermometer. What would be some of the problems with this method?*

2. *How does the centesimal meter work?(draw a picture if it helps)*

3. *Calculate the percent error for each of the α values calculated in Table 1(using values from your book). What could have contributed to the error in this experiment?*