

## Thermal Conductivity

The equipment suggested for this lab is very simple – a tennis ball. Because you will be recording temperatures, a temperature probe of some sort is needed, too. Note: A Stainless Steel Temperature Probe does not work for this lab.



*Observation:* If you rub the top of your table back and forth several times with a tennis ball, the surface becomes warm. If you check it some time later, it has cooled off. Try it.

During this lab, investigate these questions:

1. If you rub the top of your lab table or desk with the tennis ball, does it cool off at a steady rate? Cite evidence you collect to answer this question.
2. Use the same procedure on different surface types around the room or school or home, and compare the rates at which they cool off. Are there any patterns you see in the rate of cooling and the type of material in the surface?

*For discussion:*

1. Why did the surfaces get warm in the first place? Did they all get to the same temperature?
2. Why did the surfaces cool off?
3. Locate a table of thermal conductivities for common substances and compare the values in this table with the relative rates you discovered in your experimentation.

### Materials

Tennis ball  
Interface  
Data collection program  
Infrared Thermometer (optional)  
Surface Temperature Sensor (optional)