

## CHAPTER OVERVIEW

### 22: Heat, Temperature, and Friction

Human beings have long had an intuitive understanding of heat and temperature from personal experience. We sense that different things often have different temperatures and we know that objects tend to acquire the same temperature after being placed in physical contact for some time. We view this equilibration process as a flow of “heat” (whatever that is) from the warmer body to the cooler body.

A need for a more precise understanding of the behavior of heat and temperature was felt with the development of the steam engine. The science of *thermodynamics* arose out of this need. Thermodynamics was developed before we understood the atomic nature of matter. More recently the ideas of thermodynamics were related to mechanical processes happening on the atomic scale. Today we understand the phenomena of heat and temperature to be aspects of the collective mechanical behavior of large numbers of atoms and molecules.

[22.1: Temperature](#)

[22.2: Heat](#)

[22.3: Friction](#)

[22.4: Problems](#)

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