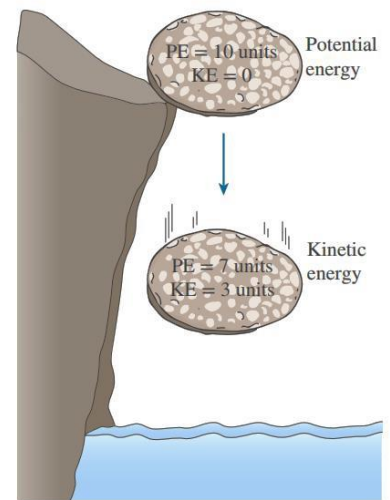


## 1-1 . THERMODYNAMICS AND ENERGY

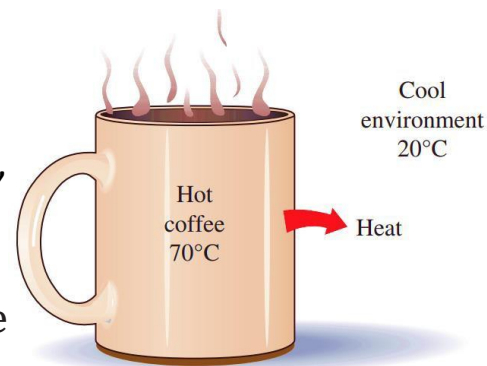
- Thermodynamics can be defined as the science of energy.
- The name thermodynamics stems from the Greek words therme (heat) and dynamics (power), which is most descriptive of the early efforts to convert heat into power.

- The **First Law of Thermodynamics**

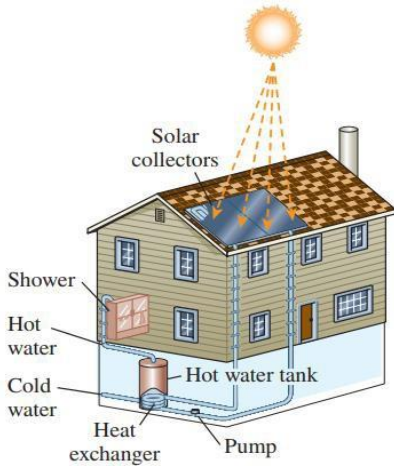
Energy can change from one form to another but the total amount of energy remains constant. That is, energy cannot be created or destroyed.



- The **second law of thermodynamics** asserts that energy has quality as well as quantity, and actual processes occur in the direction of decreasing quality of energy.
- For example, a cup of hot coffee left on a table eventually.



## Application Areas of Thermodynamics



**1–3C** An office worker claims that a cup of cold coffee on his table warmed up to  $80^{\circ}\text{C}$  by picking up energy from the surrounding air, which is at  $25^{\circ}\text{C}$ . Is there any truth to his claim? Does this process violate any thermodynamic laws?

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