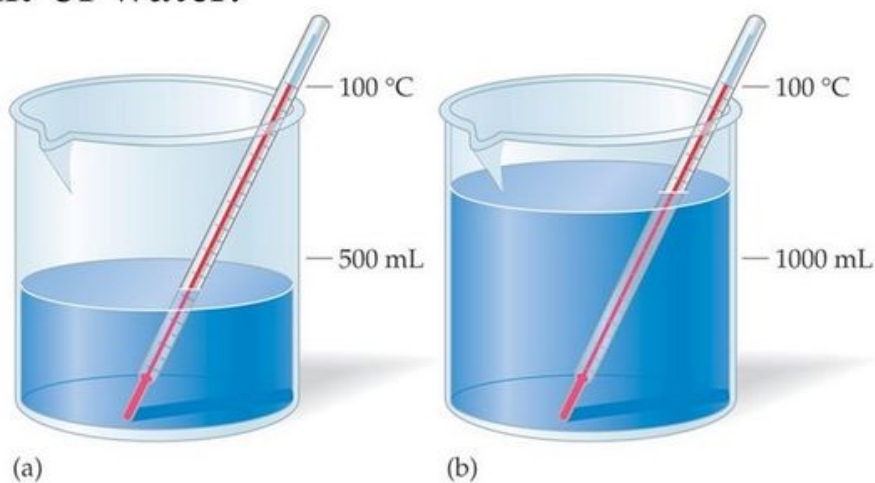


Heat vs. Temperature

- Although both beakers below have the same temperature ($100\text{ }^{\circ}\text{C}$), the beaker on the right has twice the amount of heat, because it has twice the amount of water.



Transferring of Heat



When two items are combined or touching each other, their molecules will transfer energy called heat. They will try to come to a point where they both have the same temperature. This is called equilibrium.

Heat will flow from the hotter object to the colder. The molecules in the hotter object will slow down and the molecules in the colder object will speed up. Eventually they will get to the point where they have the same temperature. This happens all the time around you.

For example, when you take an ice cube and put it into a warm soda. The ice cube will become warmer and melt, while the soda will cool down.

Energy Transfer & Conservation

Hot Objects Expand



When something gets hotter it will expand, or get bigger. At the same time, when something gets colder it will shrink. This property is used to make mercury thermometers. The line in the thermometer is actually liquid mercury. As the liquid gets hotter, it will expand and rise in the thermometer to show a higher temperature. It's the expansion and contraction due to temperature that allows the thermometer to work.



Matter Changing State

Heat has an impact on the state of matter. Matter can change state based on heat or temperature. There are three states that matter can take depending on its temperature: solid, liquid, and gas.

For example, if water is cold and its molecules are moving very slow, it will be a solid (ice). If it warms up some, the ice will melt and water becomes a liquid. If you add a lot of heat to water, the molecules will move very fast and it will become a gas (steam).

HEAT

VS

TEMPERATURE

