

Chapter 9.1: Relationship Between Temperature and Heat

1. Introduction to Heat and Temperature

- **Heat:** A form of energy obtained from various sources such as the Sun, electrical appliances, and burning of fuel. It flows from a hotter region to a colder region.
- **Temperature:** A measure of the degree of hotness or coldness of an object. It is measured using a thermometer.

Example Sentence: Heat transfers energy from a hot object to a cooler one, while temperature measures how hot or cold an object is.

2. Understanding Temperature

- **Increase in Temperature:** When water is heated, its temperature increases.
- **Decrease in Temperature:** When ice cubes are placed around bottles of juice, the temperature in the bottles decreases.

Example Sentence: Temperature increases when an object is heated and decreases when it is cooled.

3. Differences Between Heat and Temperature

- **Heat:**
 - Form of energy.
 - Measured in joules (J).
 - Depends on the type of material, quantity of material, and temperature.
- **Temperature:**
 - Degree of hotness or coldness.
 - Measured in degrees Celsius (°C) or Kelvin (K).
 - Depends on the degree of movement of particles in a material.

Example Sentence: Heat is an energy form measured in joules, while temperature is a measure of how hot or cold something is, measured in degrees Celsius or Kelvin.

Table 9.1: Differences Between Heat and Temperature

Aspect	Heat	Temperature
Definition	A form of energy	The degree of hotness or coldness of an object
Measurement	Measured in joules (J)	Measured in degrees Celsius (°C) or Kelvin (K)
Dependence	Depends on material type, quantity, and temperature	Depends on the degree of movement of particles

Example Sentence: Understanding the difference between heat and temperature is crucial; while heat is the energy transfer due to temperature difference, temperature is the measure of how hot or cold an object is.