Chapter 1

Getting Started

Introductory Concepts and Definitions

Learning Outcomes

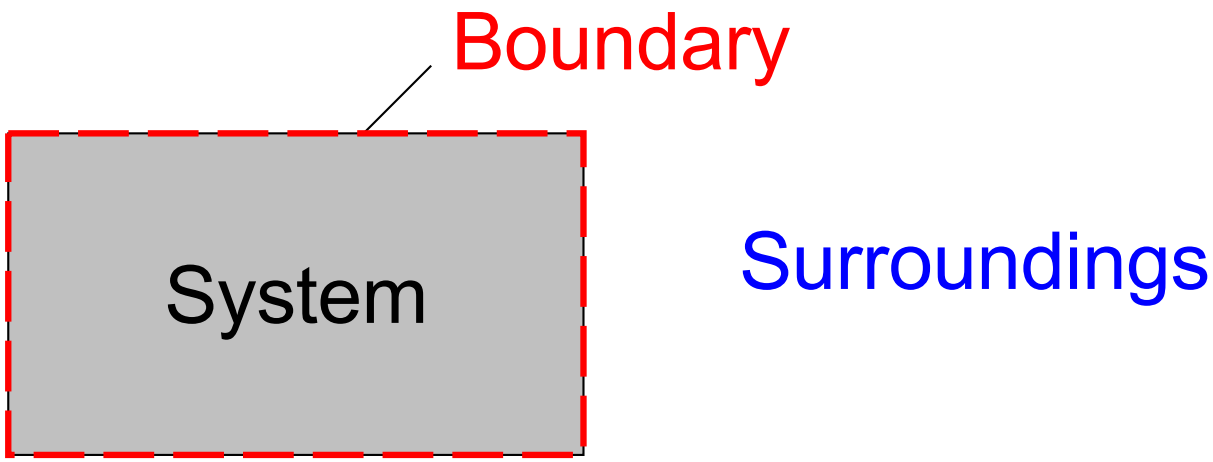
- Explain several fundamental concepts used throughout this book including closed system, control volume, boundary and surroundings, property, state, process, the distinction between extensive and intensive properties, and equilibrium.
- Identify SI and English Engineering units, including units for specific volume, pressure, and temperature.

Learning Outcomes, cont.

- Describe the relationship among the Kelvin, Rankine, Celsius, and Fahrenheit temperature scales.
- Apply appropriate unit conversion factors during calculations.
- Apply the problem-solving methodology used in this book.

Defining Systems

- System: whatever we want to study.
- Surroundings: everything external to the system.
- Boundary: distinguishes system from its surroundings.



Closed System

- A system that always contains the same matter.
- No transfer of mass across its boundary can occur.
- Isolated system: special type of closed system that does not interact in any way with its surroundings.