

## CHAPTER OVERVIEW

### 1: Gases and Equations of State

- 1.1: The Average Translational Kinetic Energy of a Gas
- 1.2: The Gaussian Distribution of One Component of the Molecular Velocity
- 1.3: The Distribution of Molecular Speeds is Given by the Maxwell-Boltzmann Distribution
- 1.4: The Maxwell-Boltzmann Distribution Has Been Verified Experimentally
- 1.5: The Frequency of Collisions with a Wall
- 1.6: Collisions with Other Molecules
- 1.7: Mean Free Path
- 1.8: The meaning and measurement of temperature
- 1.9: The variables of state, pressure units, and the ideal gas law
- 1.10: Ideal vs. real gases and the van der Waals equation
- 1.11: Another way of dealing with real gases- the virial equation
- 1.12: Connecting the van der Waals and the virial equations- the Boyle temperature
- 1.13: The ideal gas law, functions and derivatives
- 1.14: Functions of Two Independent Variables
- 1.15: The Equation of State
- 1.16: Compressibility and Expansivity
- 1.17: The Total Differential
- 1.18: Exact and Inexact Differentials

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