

Unit 1 Chemistry Study Guide

History of the Atom:

Democritus (450 BCE):

- Matter is not infinitely divisible.
- There are single particles that cannot be divided further, called **atomos**.

Aristotle (380 BCE):

- Matter is infinitely divisible.
- Matter is called **hyle**.

Antoine Lavoisier (1774):

- **Law of Conservation of Mass:** Mass cannot be created or destroyed.

Joseph Proust (1779):

- **Law of Definite Proportions:** All samples of a pure compound contain the same elements in the same proportion by mass (no matter quantity).

John Dalton (1803 – 1808):

- Observed work of Lavoisier and Proust
- Led Dalton to develop the first **atomic theory**.
- **Dalton's Atomic Theory:**
 - o All matter is composed of extremely small particles called atoms.
 - o All atoms of a given element are identical, having the same size, mass, and chemical properties. The atoms of one element are different from the atoms of all other elements.
 - o Atoms cannot be subdivided, created, or destroyed.
 - o Atoms of different elements can combine in simple whole number ratios to form chemical compounds.
 - o In chemical reactions, atoms are combined, separated or rearranged.
- **Law of Multiple Proportions:** Elements can combine in different proportions. However, the different compounds will have different properties but the ratio of atoms is always a whole number.

Billiard Ball Model:



atom

J.J. Thompson (1906):

- **Cathode Ray Experiment –**
 - o Part 1: Thompson ran electricity through a cathode ray tube and when he put the negatively charged end of a magnet near the tube, he saw the ray of electricity

Unit 1 Chemistry Study Guide

Alyn McFarland



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Basic Concepts of Chemistry, 9e Study Guide and Solutions Manual Leo J. Malone, Theodore O. Dolter, 2012-01-03 The 9th edition of Malone's Basic Concepts of Chemistry provides many new and advanced features that continue to address general chemistry topics with an emphasis on outcomes assessment. New and advanced features include an objectives grid at the end of each chapter which ties the objectives to examples within the sections, assessment exercises at the end of each section and relevant chapter problems at the end of each chapter. A new Math Check allows quick access to the needed basic skill. The first chapter now includes brief introductions to several fundamental chemical concepts and Chapter Synthesis Problems have been added to the end of each chapter to bring key concepts into one encompassing problem. Every concept in the text is clearly illustrated with one or more step-by-step examples. Making it Real essays have been updated to present timely and engaging real-world applications emphasizing the relevance of the material they are learning. This edition continues the end-of-chapter Student Workshop activities to cater to the many different learning styles and to engage users in the practical aspect of the material discussed in the chapter.

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Table of Contents Unit 1 Chemistry Study Guide

1. Understanding the eBook Unit 1 Chemistry Study Guide
 - The Rise of Digital Reading Unit 1 Chemistry Study Guide
 - Advantages of eBooks Over Traditional Books
2. Identifying Unit 1 Chemistry Study Guide
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in a Unit 1 Chemistry Study Guide
 - User-Friendly Interface
4. Exploring eBook Recommendations from Unit 1 Chemistry Study Guide
 - Personalized Recommendations
 - Unit 1 Chemistry Study Guide User Reviews and Ratings
 - Unit 1 Chemistry Study Guide and Bestseller Lists

5. Accessing Unit 1 Chemistry Study Guide Free and Paid eBooks
 - Unit 1 Chemistry Study Guide Public Domain eBooks
 - Unit 1 Chemistry Study Guide eBook Subscription Services
 - Unit 1 Chemistry Study Guide Budget-Friendly Options
6. Navigating Unit 1 Chemistry Study Guide eBook Formats
 - ePub, PDF, MOBI, and More
 - Unit 1 Chemistry Study Guide Compatibility with Devices
 - Unit 1 Chemistry Study Guide Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Unit 1 Chemistry Study Guide
 - Highlighting and Note-Taking Unit 1 Chemistry Study Guide
 - Interactive Elements Unit 1 Chemistry Study Guide
8. Staying Engaged with Unit 1 Chemistry Study Guide
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Unit 1 Chemistry Study Guide
9. Balancing eBooks and Physical Books Unit 1 Chemistry Study Guide
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Unit 1 Chemistry Study Guide
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Unit 1 Chemistry Study Guide
 - Setting Reading Goals Unit 1 Chemistry Study Guide
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Unit 1 Chemistry Study Guide
 - Fact-Checking eBook Content of Unit 1 Chemistry Study Guide
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
- Integration of Multimedia Elements
 - Interactive and Gamified eBooks

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