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› [Laboratory Manual for Chemistry: An Introduction to General, Organic, and Biological Chemistry, 9th Edition by Karen Timberlake](#)

Pearson 0805330259

Laboratory Manual for Chemistry: An Introduction to General, Organic, and Biological Chemistry

Author: Karen Timberlake | Edition: 9th

[Introduction](#)

[Using the Manual](#)

[Experiment Structure](#)

[Key Topics](#)

[Covered](#)

[Specifications](#)

[Support](#)

1. INTRODUCTION

This laboratory manual is designed to accompany a standard sequence of topics in general, organic, and biological chemistry. It provides 42 experiments intended to reinforce theoretical concepts through practical application.

The manual aims to guide students through essential laboratory procedures, data collection, and analysis, fostering a deeper understanding of chemical principles.

2. USING THE MANUAL

Each experiment in this manual is structured to facilitate a clear and systematic approach to laboratory work. Users should familiarize themselves with the entire experiment before beginning any practical work.

Preparation: Before each lab session, read the experiment thoroughly. Understand the objectives, procedures, and safety precautions. Prepare any pre-lab assignments as required.

Safety: Always adhere to general laboratory safety rules. Wear appropriate personal protective equipment (PPE), such as safety goggles. Handle chemicals with care and dispose of waste properly. Consult your instructor for specific safety guidelines related to each experiment.

Data Recording: Utilize the provided report sheets for organized data collection. Accurate and legible recording of observations and measurements is crucial for successful experiment completion and analysis.

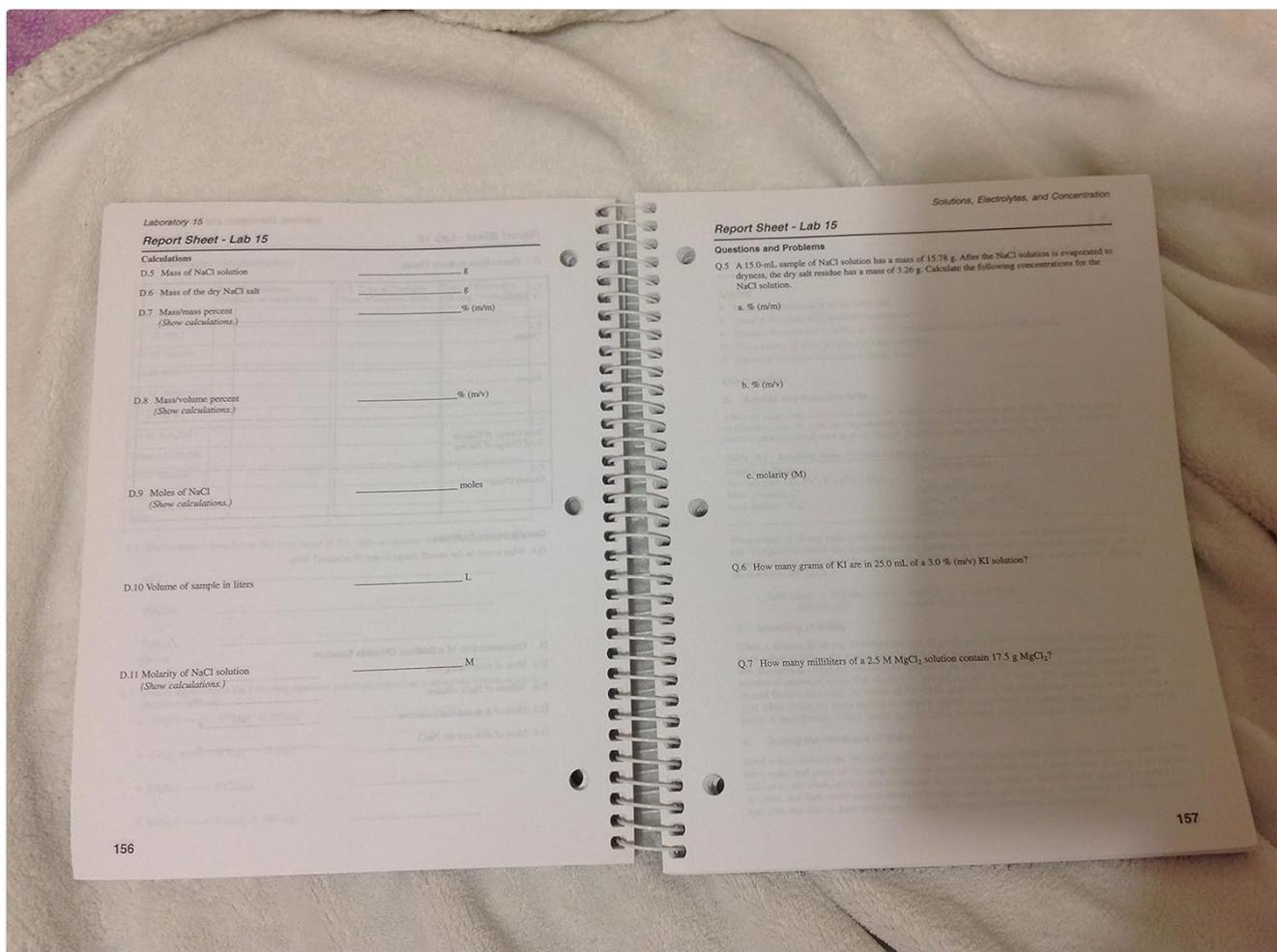


Figure 1: An open page of the manual displaying a report sheet for Lab 15, detailing sections for calculations and questions related to solutions and concentration.

3. EXPERIMENT STRUCTURE

Each of the 42 experiments typically includes the following components:

- **Introduction:** Provides background information and theoretical context for the experiment.
- **Objectives:** Clearly states what the student should learn or achieve.
- **Materials:** Lists all necessary chemicals and equipment.
- **Procedure:** Step-by-step instructions for conducting the experiment.
- **Observations and Data:** Sections for recording experimental results.
- **Calculations:** Guidance and space for performing necessary calculations.
- **Questions:** Post-lab questions to assess understanding and critical thinking.

4. KEY CHEMISTRY TOPICS COVERED

The manual covers a broad range of topics across three main areas of chemistry:

General Chemistry

- Measurement and Significant Figures
- Conversion Factors in Calculations
- Density and Specific Gravity
- Atomic Structure; Electronic Configuration and Periodic Properties

- Nuclear Radiation
- Compounds and Their Formulas
- Energy and Specific Heat; Energy and States of Matter
- Chemical Reactions and Equations; Reaction Rates and Equilibrium
- Moles and Chemical Formulas; Gas Laws; Partial Pressures of Gas Mixtures
- Solutions, Electrolytes, and Concentration; Soluble and Insoluble Salts
- Testing for Cations and Anions; Solutions, Colloids, and Suspensions
- Acids, Bases, pH and Buffers; Acid-Base Titration

Organic and Biological Chemistry

- Properties of Organic Compounds; Structures of Alkanes
- Reactions of Hydrocarbons; Alcohols and Phenols
- Aldehydes and Ketones; Types of Carbohydrates; Tests for Carbohydrates
- Carboxylic Acids and Esters; Aspirin and Other Analgesics
- Lipids; Glycerophospholipids and Steroids; Saponification and Soaps
- Amines and Amides; Synthesis of Acetaminophen
- Plastics and Polymerization; Amino Acids; Peptides and Proteins
- Enzymes; Vitamins; DNA Components and Extraction
- Digestion of Foodstuffs; Analysis of Urine

5. SPECIFICATIONS

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Discover more great study tools
to help you make the grade!

Study Guide and Selected Solutions

0-8053-3024-0

Written by author Karen Timberlake, this study guide is keyed to the learning goals in the text and is designed to promote active learning through a variety of exercises and mastery exams. Solutions to odd-numbered problems are provided to help you check your work.

The Chemistry Place for *Chemistry: An Introduction to General, Organic, and Biological Chemistry*, Ninth Edition Website and CD-ROM

www.prenhall.com/chemplace

Tailored specifically to the text, this website offers comprehensive and interactive teaching and learning resources for chemistry. Features include tutorials, simulations, career resources, practice quizzes, review questions, case studies, an interactive periodic table, and a glossary. In lessons adapted from *The Chemistry of Life for Introductory Chemistry* CD-ROM, high-quality animations and interactive simulations help you master crucial concepts.

A 12-month subscription and a CD-ROM version of *The Chemistry Place* are included with each new copy of *Chemistry: An Introduction to General, Organic, and Biological Chemistry*, Ninth Edition.

The Tutor Center

www.prenhall.com/tutorcenter

This center provides one-on-one tutoring by phone, fax, e-mail, and the Internet during evening hours. Qualified instructors answer questions and provide instructions regarding examples, exercises, and other content found in the text.

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Figure 2: The back cover of the manual, displaying ISBN-13 (978-0805330250) and information regarding supplementary study tools and online resources.

6. SUPPORT AND RESOURCES

For additional support and supplementary resources related to this manual and chemistry studies, please refer to the publisher's official websites:

- **The Chemistry Place for Chemistry:** www.prenhall.com/chemplace
- **The Tutor Center:** www.prenhall.com/tutorcenter

These resources may offer interactive teaching and learning materials, practice quizzes, review sections, simulations, and a glossary to enhance your learning experience.

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