College Accounting Seventh Edition Chapters 1-18

Price Haddock Brock

COLLEGE ACCOUNTING

SEVENTH EDITION

John Ellis Price, Ph.D., C.P.A.

Associate Professor of Accounting College of Business Administration University of North Texas Denton, Texas

M. David Haddock, Jr., Ed.D., C.P.A.

Contributing Author
Professor of Accounting
Chattanooga State Technical Community College
Chattanooga, Tennessee

Horace R. Brock, Ph.D., C.P.A.

Distinguished Professor of Accounting Emeritus
College of Business Administration
University of North Texas
Denton, Texas



Macmillan/McGraw-Hill

PHOTO CREDITS: Cover, Zigy Kaluzny/Tony Stone Images; Page iv, Chuck Keeler/Tony Stone Images; v, (t) Jo Riley/Tony Stone Images, (b) Michael Krasowitz/FPG International; vi, (t) Comstock, Inc., (b) © Stock Imagery, Inc. 1992; vii, (t) Hickson and Associates, (b) Comstock, Inc.; viii, (t) Comstock, Inc., (b) Andy Sacks/Tony Stone Images; ix, (t) Dick Luria/FPG International, (b) Comstock, Inc., x, (t) Comstock, Inc., (b) Bob Mullenix; xi, Hans Peter Merten/Tony Stone Images; xii, (t) Comstock, Inc., (b) Jim Pickerell/FPG International; xiii, (t) Bob Mullenix, (b) Comstock, Inc.; 1, Bob Mullenix; 3, Chuck Keeler/Tony Stone Images; 22, Jo Riley/Tony Stone Images; 51, Michael Krasowitz/FPG International; 85, Comstock, Inc.; 112, © Stock Imagery Inc. 1992; 145, Hickson and Associates; 174, 175, 176, Todd Yarrington; 178, 229, Comstock, Inc.; 264, Andy Sacks/Tony Stone Images; 332, Dick Luria/FPG International; 369, 409, Comstock, Inc.; 449, Bob Mullenix; 491, 492, 493, 494, 495, 496, Todd Yarrington; 497, Tim Brown/Tony Stone Images; 499, Hans Peter Merten/Tony Stone Images; 529, Comstock, Inc.; 554, Jim Pickerell/FPG International; 585, Bob Mullenix; 608, Comstock, Inc.

Library of Congress Cataloging-in-Publication Data

Price, John Ellis.

College accounting/John E. Price, M. David Haddock, Jr., Horace R. Brock.—7th ed.

. DIOCK.—7till ec

Rev. ed. of: Accounting: basic principles/Horace R. Brock,

Charles E. Palmer, John Ellis Price, 6th ed. c1990.

Includes index.

ISBN 0-02-801441-3

1. Accounting. I. Haddock, M. David. II. Brock, Horace R.

III. Brock, Horace R. Accounting. IV. Title.

HF5635.B8542 1993

657-dc20

93-19084

CIP

COLLEGE ACCOUNTING Seventh Edition

Copyright © 1994 by the Glencoe Division of Macmillan/McGraw-Hill School Publishing Company. All rights reserved. Copyright © 1990 by the Glencoe Division of Macmillan/McGraw-Hill School Publishing Company as *Accounting: Principles and Applications, College Course.* All rights reserved. Copyright © 1986, 1981, 1974 by McGraw-Hill, Inc. All rights reserved. Copyright © 1969, 1963 by McGraw-Hill, Inc. as *College Accounting—Theory/Practice.* All rights reserved. Except as permitted under the United States Copyright Act, no part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of the publisher.

Send all inquiries to: GLENCOE DIVISION Macmillan/McGraw-Hill 936 Eastwind Drive Westerville, Ohio 43081

ISBN 0-02-801443-X

Printed in the United States of America.

2 3 4 5 6 7 8 9 10 RRD-W 99 98 97 96 95 94

Preface

he seventh edition of College Accounting is the most comprehensive revision of the text ever. While retaining the key features of prior editions—short units of instruction; a clear, concise writing style; numerous illustrations and examples; and abundant questions, exercises, problems, and projects—the authors have added a number of new features to meet the needs of today's business students and instructors. These new features are the result of discussions with students, adult learners, and instructors; oncampus visits; reviews of the text by accounting instructors; and comments received from adopters. Additionally, the authors have used a more integrated approach in their writing style to demonstrate the link between accounting and computers, business ethics, communication, and the international environment. These areas are essential to a successful career in business. This approach is endorsed by the Accounting Education Change Commission, which was created in 1989 by the American Accounting Association to direct national attention to the need for change in accounting education. The authors believe that this approach will help students to become better prepared to solve real-world problems.

RETENTION AND REINFORCEMENT

This edition employs a sound pedagogy for assisting a student to learn accounting. Each chapter introduces accounting concepts through short learning modules. At the end of each module the student can reinforce understanding through self-review questions and answers. This reinforcement technique allows a student to build on a mastery of each concept. Retention and reinforcement are further enhanced through the variety of end-of-chapter activities, including questions, exercises, problems, challenge problems, critical thinking problems, and the practice sets.

SOLID ACCOUNTING COVERAGE

MAJOR TEXTBOOK CHANGES

The seventh edition of *College Accounting* reflects a solid coverage of accounting concepts and principles. The textbook establishes a foundation of accounting procedures within the traditional proprietorship accounting cycle and builds on this framework as it examines alternative methods of accounting for assets, liabilities, and equity accounts. In addition, the textbook expands on partnership, corporation, and managerial accounting concepts. This solid accounting coverage can serve as the basis for a student to elect advanced accounting courses or serve as the basic accounting requisite for a management, marketing, or finance degree.

The following summarizes the major changes that have been introduced in the student edition of the textbook.

- **NEW Four-Color Format.** A new, four-color format allows functional use of color for emphasis and in the design of diagrams, illustrations, and accounting forms. Moreover, money columns are highlighted in the accounting forms. Color is further used to distinguish journals, ledgers, and financial statements.
- **NEW Chapter Reorganization.** The new organization of chapters presents an orderly flow of accounting concepts. By reorganizing several chapters of the prior edition we offer a crisp and concise presentation of the accounting cycle, partnerships, and corporation accounting.
- **NEW Short Learning Modules.** Each chapter is divided into short learning modules. Each module is followed by a student self-check activity. The results of this activity will let students know how well they have mastered the accounting concepts in the module.
- **NEW Competency-Based Chapters.** Chapter objectives based on expected learner outcome introduce each chapter. Each objective is repeated in the margin alongside the text material that develops the objective. The objective is also keyed beside the exercises and problems that relate to the objective.
- **NEW Illustrations.** This edition makes widespread use of color illustrations. Examples of textbook illustrations include flow charts of accounting concepts, the use of T accounts to reinforce journal entries, diagrams that highlight posting procedures, and detailed financial statements.
- **NEW Vocabulary.** A new strategy to help students master accounting vocabulary is built into each chapter. All new terms are previewed on the chapter-opener page, appear in boldface type where defined, and are summarized in a glossary at the end of the chapter with page references. In addition, a master glossary appears at the end of the textbook, and the index highlights all defined terms.

- NEW Communications, Ethics, Computers, and International Accounting Vignettes. Short vignettes highlight timely adjunct areas of accounting suggested by the Accounting Education Change Commission of the American Accounting Association. These articles expand a student's horizon and allow the instructor to teach across the curriculum. Each article addresses a single concept and complements the chapter material without interrupting its natural flow. Selected vignettes are supported with student activities. For example, the communications activities not only illustrate business memos and letters but suggest student assignments that are typical of an accounting office environment. The ethics vignettes are designed for lively classroom discussion and involve timely real-world events that closely identify with the chapter materials. Comprehensive instructor materials support all student activities.
- NEW Margin Notes. Major concepts are emphasized, and previously introduced concepts are reinforced in the margin. Learning objectives and points for students to remember are also highlighted.
- **NEW In-Text Worksheet Transparencies.** A special worksheet illustration using multiple overlay transparencies is bound into Chapter 5 of the textbook. This illustration highlights the procedures to prepare a worksheet on a step-by-step basis. The illustration culminates with the presentation of the financial statements that are prepared from the worksheet.
- NEW Managerial Focus. Each chapter concludes with a short discussion of real-world managerial applications. In addition, managerial questions are an integral part of every end-of-chapter activity section.
- NEW End-of-Chapter Applications: Exercises, Problems A and B, Challenge Problem, and Critical Thinking Problem. Each major concept in each chapter is supported with an exercise. The problems combine two or more major concepts and are presented in order from simple to complex. New to this edition is the introduction of a "Challenge Problem" and a "Critical Thinking Problem" for each chapter.
- NEW Computer Activities. Selected exercises and problems may be completed on a computer. These activities are designated by icons that indicate the nature of the software to be used: Tutorial, General Ledger, or Spreadsheet. The supplementary use of the computer adds a new dimension to student review and reinforcement of the material presented in the chapter.

MAJOR FEATURES OF THE STUDENT SUPPORT MATERIALS

The following summarizes the major changes and features in the student support materials. These materials will assist the student in mastering the accounting concepts introduced in the textbook.

Study Guide and Working Papers. The Study Guide and the Working Papers are combined into one workbook. The Study Guide contains a step-by-step study plan, objective questions and exercises with self-check solutions, and a demonstration problem with solution. Working papers are supplied for all the Exercises, the A or B Problems, the Challenge Problem, and the Critical Thinking Problem.

Computer Applications. A variety of student software supports *College Accounting*, including an electronic study guide for tutorial use, general ledger software, and spreadsheet software. Detailed user's guides accompany all software packages.

Electronic Study Guide. Students may use a special tutorial computer-software package that contains study guide questions and tutorial activities similar to the designated textbook exercises and problems. A special feature of the tutorial software is a computergenerated program that reports to the student the objective questions that were correctly and incorrectly answered. A basic math review program is included in this software, as well as a review of Generally Accepted Accounting Principles.

Accounting Software Systems. *College Accounting* is supported by two basic types of accounting software systems: (1) the Glencoe integrated system ACCLAIM and (2) commercial software.

ACCLAIM Software. The ACCLAIM software, an integrated Glencoe program accompanied by a template disk, assists students in solving designated chapter exercises and problems. This software also allows students to solve the mini-practice sets in the textbook and the stand-alone practice sets that are available with *College Accounting*.

Commercial Software. Template disks are available to provide opportunities to solve selected chapter problems and practice sets using the most commonly used commercial accounting software: ACCPAC®, Simply Accounting, Dac-Easy®, and Peachtree®.

Accounting Spreadsheet Software. Two types of spreadsheet template disks are available for solving designated textbook problems: (1) a self-booting spreadsheet template disk and (2) a Lotus spreadsheet template disk.

Dictionary of Accounting Terms. A quick, easy reference to accounting and computer terms is offered in a separately bound dictionary of accounting terms. Each term has been defined using the terminology found in *College Accounting*. The computer terms will assist students who elect a microcomputer accounting course after completing the basic course.

MAJOR FEATURES OF THE INSTRUCTOR'S SUPPORT MATERIAL

The following summarizes the major changes that have been made to the instructor's support materials. All these materials provide a variety of innovative teaching suggestions and alternative methods in presenting accounting concepts.

Instructor's Wraparound Edition of the Textbook

For the first time, the college accounting instructor has a comprehensive teaching guide. This unique and innovative four-color text-book teaching guide combines the student edition with the instructor's edition to provide a wealth of teaching support. Teaching suggestions and strategies specifically focus on each major concept. Interesting business connections and real-world accounting facts and figures provide a learning link. Course management tips, program components, pop quizzes, cooperative-learning strategies, life experience applications, reteaching strategies, and special-needs strategies are combined into this unprecedented publication.

Instructor's Resource Portfolio

A variety of individual booklets designed to support multiple teaching needs are housed in a handsome, tabbed portfolio.

Lesson Plans/Lecture Outlines. Lesson plans and lecture outlines for each chapter are provided in a separately bound booklet. The booklet contains teaching objectives, student objectives, a list of instructor's tools, key terms, major concepts, assignments, and evaluation. The materials are perforated and can be duplicated as needed.

How to Study Accounting. A separate booklet offers specific techniques and suggestions to help students develop good study skills. The suggestions focus on methods that students can use when reading technical materials such as those found in accounting to aid them in sorting out key concepts that will facilitate their comprehension.

Math Review. A booklet of activities designed to help students review and develop their basic math skills is provided. It includes a pretest, specific instructions for solving problems, practice problems, and demonstration masters for use with the overhead projector. The activities are provided as blackline masters to facilitate their reproduction and distribution to students or conversion to overhead transparencies.

Blackline Teaching Masters. A set of blackline teaching masters that support the major concepts in each chapter, as well as a comprehensive set of accounting form masters, are provided in booklet form. These masters may be converted into transparencies to be used with the overhead projector or duplicated and distributed to students for classroom use.

Strategies for Using Teaching Transparencies. Another booklet offers suggestions on the most effective way to use each of the trans-

parencies that are described on p. xxii under "Teaching Transparencies." Suggestions are included for using the overhead projector and for duplicating the transparency for individual student use in conjunction with illustrations in the textbook.

Strategies for Integrating Computers in Accounting. A general discussion on using computers in the classroom, combined with specific strategies for incorporating computers in an accounting classroom, is provided in a self-contained booklet. A detailed review of the student and instructor software that accompanies *College Accounting* provides suggestions to maximize the effectiveness of each accounting software package in classroom or lab situations.

Strategies for Teaching Ethics in Accounting. This booklet begins with an overview of the importance of teaching ethics in the accounting classroom. The booklet also contains specific ways of introducing the textbook vignettes on ethics, as well as providing a decision model with solutions. Each student activity contains specific teaching guides for classroom discussion.

Strategies for Infusing Communications in Accounting. As a discussion of the importance of communications in accounting, this booklet provides general suggestions for helping students sharpen their skills in reading, analyzing, and reporting financial information. This booklet also contains rationales for communication projects, features, strategies, and evaluation guidelines. There are specific instructor solutions for each communication project. These solutions contain detailed background information and additional teaching suggestions.

Strategies for Teaching Global Perspectives in Accounting. An overview of the role of accounting in a global environment, as well as specific vignette discussion questions and answers, are provided in this instructor booklet. Also, there is a series of optional student activities that will broaden a student's international horizon.

Testing Package

A variety of testing resources are available with *College Accounting*. The flexibility of these resources will allow an instructor to design a testing program specifically tailored to the aims and objectives of the course.

Test Bank. The test-bank book contains true-false questions, multiple-choice questions, fill-in questions, and problems and solutions for each chapter. Each solution immediately follows its question.

Test Bank Software. This test bank is an electronic version of the test-bank book. Its software program allows an instructor either to select individual test questions or to select randomly and customize a test. Moreover, the software has the flexibility to allow instructors to incorporate additional testing materials into the program.

Achievement Tests. A and B versions of an achievement test have been developed for each chapter. These tests contain a combination

of objective questions and problems to measure the student's understanding of the major concepts of the chapter.

Solutions Manuals

Annotated editions of the Student Study Guide and Working Papers provide solutions to the exercises and problems at the end of each chapter. For clarity, student solutions appear in a second color.

Solutions Transparencies

Boxed volumes of solution transparencies are available for all exercises and problems. The large-type format will project well using an overhead projector.

Teaching Transparencies

Four-color teaching transparencies that illustrate selected major accounting concepts in the textbook are supplied in a separate package. They summarize concepts and enhance textbook illustrations.

Accounting Cycle Reinforcement Video

A video discusses the major concepts introduced in the accounting-cycle section of *College Accounting*. The step-by-step presentation of each concept offers an excellent method of introducing a specific accounting topic or of reviewing it.

MANUAL AND COMPUTER-ASSISTED PRACTICE SETS

Two practice sets accompany this version of *College Accounting*. Each practice set may be completed manually or on the computer.

Whitewater Wilderness Canoe Livery is a sole proprietorship service business that uses source documents, general journals, general ledgers, work sheets, and a filing system. This set can be completed after Chapter 6.

Wood n' Things is a sole proprietorship merchandise business that uses source documents, special journals, general ledger, subsidiary ledger, work sheet, accounting forms, and a filing system. This set can be completed after Chapter 13.

AUTHOR ACKNOWLEDGMENTS

The authors wish to express their appreciation to all of the following professionals for their generous contributions:

- Dr. Michael R. Lane, CPA, Director, MBA Program, Bradley University
- Ms. Nina Watson, MSBE, Consultant in Language Arts
- Mr. Howard Donaldson, CPA, Glencoe Publishing
- Ms. Linda Herrington, CPA, Community College of Allegheny County
- Dr. Carolyn Hagler, Associate Professor, The University of Southern Mississippi

A special note of appreciation is in order for Dr. Charles E. Palmer, Professor Emeritus, for the many years that he has been associated with accounting education and the writing and editing of many quality accounting publications.

Acknowledgments

The authors are deeply grateful to the following accounting educators for their ongoing involvement with the *College Accounting* program. As the program moves from edition to edition, the efforts of these knowledgeable and dedicated instructors provide the authors with extremely valuable assistance in meeting the changing needs of the college accounting classroom.

Linda Acker

Bevill State Community College

George Allen

Bishop State Community College

Andy Anderson Bryan Institute

Jere Anderson

Alexandria Technical College

Pam Anglin

Navarro Junior College

Richard Arlen Schoolcraft College

Judy Austin

Shelton State Community College

Marilyn Beebe

Kirkwood Community College

Carol Cardone The Cittone Institute

George Carter

New Hampshire Technical College

Mike Choma

New Kensington Commercial School

Craig Christopherson Richland College Carol Chiulli The Sawyer Schools George Convers Stone Academy Harvey Cooke

Penn Valley Community College

Joseph L. Dawson Kingwood College Kathy Denham

Edmunds Community College

Lela Eldridge Denson

Volunteer State Community College

Elsie Dubac Stuart School Sherry Dusch

Barnes Business College

Dave Evans

Johnson County Community College

Kim Frantz CTBI

William D. Freund Tampa College Jack Gurney Casco Bay College Sharon Gough

Labette Community College

Rich Green Burdett School Carolyn Hairston

Faulkner State Community College

BeeBee Hall

Executive Secretarial School

Daniel Harper Stoutzenberger College Linda Herrington

Community College of Allegheny

County

Brenda Earle Ray Hester

Volunteer State Community College

Paul Hogan

Shoals Community College

Nancy Hogg Davenport College Cynthia Holloway

Tarrant County Junior College-

Northeast

Jay Hollowell Commonwealth College

Elinor Hollyfield

UCM School of Business

George Huffman

Tacoma Community College

Richard Irvine

Pensacola Junior College

xxiv - ACKNOWLEDGMENTS

Vernamae Johnson

Brown Mackie Business College

Marilyn Jones

Friends University

Carol Keltner

Manhattan AVTS

Don King

ITT

Frank Korman

Mountain View College

Dr. Tom Land

Bessemer State Technical College

Gene Lefort

Thibodaux Technical Institute

Carol Lemen

Odessa College

John Leonard

Garden City Community College

Lenny Long

Fisher College

r ioner comeg

Susie Mackey Charter College

Dr. Ty Mathews

Broward Community College-S

Clarise McCoy

Brookhaven College

Bill McDowell

Central Alabama Community College

Connie McGee

American Institute of Commerce

Christine M. Mekdsy

New England Institute of Technology

William Mittelstadt

American Institute of Commerce

Paul Morgan

Mississippi Gulf Coast Community

College

William D. Newsome

State Technical Institute at Memphis

John Nigro

Stone Academy

George Olson

New England Banking Institute

Rick Orszulak

Pittsburgh Office Management Center

Robert Painter

St. Petersburg Junior College

Jean Roberts

Opelika State Technical College

Dr. Francis Sakiey

Mercer County Community College

Carmen Salinas

San Antonio College

Billie Scott

Northeast Kansas AVTS

Linda Scott

Ivy Tech

Margaret Sheehy

Bradford School

Nelda Shelton Tarrant County Junior College-South

Sam Silver

Mayland Community College

Brenda Smith

State Technical Institute at Memphis

Ken Smith

Indiana Business School

Sheridan Smith

Southwestern Community College

Calvin Snyder

Polk Community College

Carolyn Spangler

Blue Ridge Community College

Leslie Tippitt

Tarrant County Junior College-South

Steve Tipton

Indiana Business College

Don Trent

Dodge City Community College

Gary Tusing

Lord Fairfax Community College

Jack Verani

New Hampshire Technical College

Phil Waits

Ayers State Technical College

Naomi Ward

Northwest AVTS

Jim Weglin

North Seattle Community College

Dale Westfall

Midland College

Richard Whiteside

Mississippi Gulf Coast Community

College

Mark Yurgevich

ITT

Brief Contents

CHAPTER	1	Accounting: The Language of Business	2
CHAPTER	2	Analyzing Business Transactions	22
CHAPTER	3	Analyzing Business Transactions Using T Accounts	51
CHAPTER	4	The General Journal and the General Ledger	85
CHAPTER	5	Adjustments and the Worksheet	112
CHAPTER	6	Closing Entries and the Postclosing Trial Balance	145
CHAPTER	7	Accounting for Sales and Accounts Receivable	178
CHAPTER	8	Accounting for Purchases and Accounts Payable	229
CHAPTER	9	Cash Receipts, Cash Payments, and Banking Procedures	264
CHAPTER	10	Payroll Computations, Records, and Payment	332
CHAPTER	11	Payroll Taxes, Deposits, and Reports	369
CHAPTER	12	Accruals, Deferrals, and the Worksheet	409
CHAPTER	13	Financial Statements and Closing Procedures	449
CHAPTER	14	Accounting Principles and Reporting Standards	499
CHAPTER	15	Accounts Receivable and Uncollectible Accounts	530
CHAPTER	16	Notes Payable and Notes Receivable	554
CHAPTER	17	Merchandise Inventory	585
CHAPTER	18	Property, Plant, and Equipment	608

Contents

	U N I T O N E The Accounting Cycle	2
CHAPTER 1	Accounting: The Language of Business	3
	The Need for Financial Information Accounting Defined Accounting Careers Users of Financial Information Self-Review Questions and Answers	4 4 4 6 8
	Types of Business Entities Generally Accepted Accounting Principles Managerial Implications Self-Review Questions and Answers	9 13 16 17
FEATURES Communication Overview 10 The Age of Computers and Accounting 15	Review and Applications Chapter Summary Glossary of New Terms Review Questions Managerial Focus Critical Thinking Problem	18 18 19 20 20

CHAPTER 4

The General Journal and the General Ledger	85
Journals	86
The General Journal	86
Self-Review Questions and Answers	92
Ledgers	92
Correcting Journal and Ledger Errors	97
Managerial Implications	99
Self-Review Questions and Answers	99
Review and Applications	100
Chapter Summary	100
Glossary of New Terms	100
Review Questions	101
Managerial Focus	101
Exercises	101
Problem Set A	103
Problem Set B	106
Challenge Problem	109
Critical Thinking Problem	111

CHAPTER

5



FEATURES

Planning and Developing Communication 120 Computerized Accounting Systems 129

Adjustments and the Worksheet	112
The Worksheet Self-Review Questions and Answers	113 117
Preparing Financial Statements Journalizing and Posting Adjusting Entries Managerial Implications Self-Review Questions and Answers	124 126 128 130
Worksheet Overlay	T1-T8
Review and Applications Chapter Summary Glossary of New Terms Review Questions Managerial Focus Exercises Problem Set A Problem Set B Challenge Problem Critical Thinking Problem	131 131 132 132 133 135 138 142 143

CHAPTER 6	Closing Entries and the Postclosing Trial Balance	145
	Closing Entries Self-Review Questions and Answers	146 153
CACAL CONTRACTOR OF THE PARTY O	Preparing the Postclosing Trial Balance Interpreting the Financial Statements The Accounting Cycle Managerial Implications Self-Review Questions and Answers	154 155 156 160 160
FEATURE The International Marketplace 158	Review and Applications Chapter Summary Glossary of New Terms Managerial Focus Exercises Problem Set A Problem Set B Challenge Problem Critical Thinking Problem	161 161 162 162 165 168 172 172
	MINI-PRACTICE SET 1: Service Business Accounting Cycle	174
	U N I T T W O Recording Financial Data	177
CHAPTER 7	Accounting for Sales and Accounts Receivable	178
	The Accounting System of a Merchandising Business Self-Review Questions and Answers Self-Review Questions and Answers	179 186 196
	Recording Credit Sales for a Wholesale Business Credit Policies Sales Tax Managerial Implications Self-Review Questions and Answers	197 199 204 210 211
FEATURES	Review and Applications Chapter Summary Glossary of New Terms	212 212 213
Ethics: Timing Is	Review Questions	214
Everything! 191	Managerial Focus	214
Computerized Sales	Exercises	215
Invoices 208	Problem Set A	219
	Problem Set B	223
	Challenge Problem Critical Thinking Problem	226 228