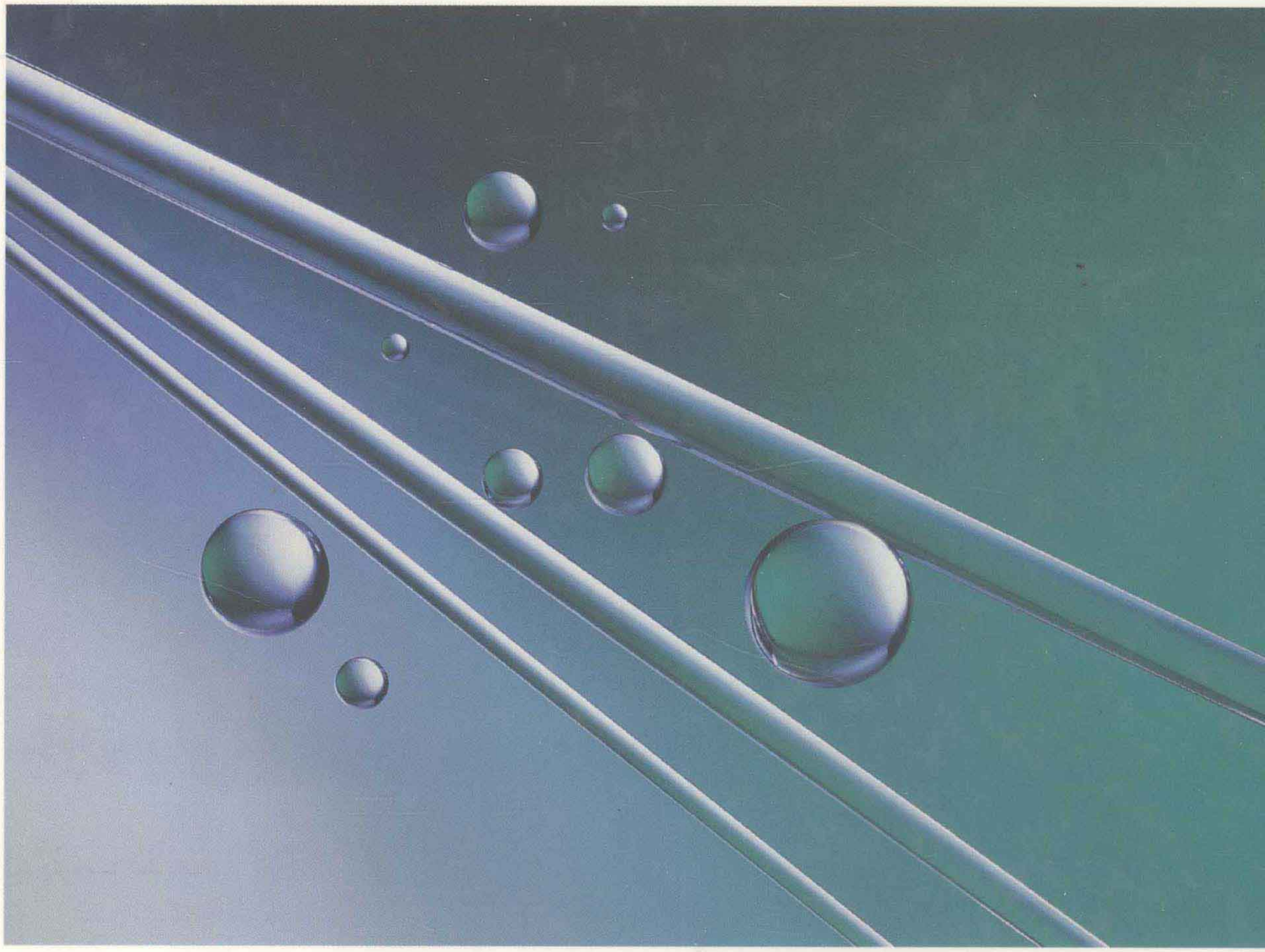
GUSTAFSON / FRISK

4



Beginning Algebra

4

Beginning Algebra

R. David Gustafson
Peter D. Frisk

Rock Valley College

Brooks/Cole Publishing Company

I(T)P™ An International Thomson Publishing Company

Pacific Grove • Albany • Bonn • Boston • Cincinnati • Detroit • London • Madrid • Melbourne
Mexico City • New York • Paris • San Francisco • Singapore • Tokyo • Toronto • Washington

GWO A Gary W. Ostedt Book

Sponsoring Editor: *Gary W. Ostedt*
Editorial Associate: *Carol Ann Benedict*
Production Editor: *Ellen Brownstein*
Production Service: *Hoyt Publishing Services*
Manuscript Editor: *David Hoyt*
Permissions Editor: *May Clark*
Interior and Cover Design: *E. Kelly Shoemaker*
Marketing Team: *Patrick Farrant and Jean Vevers Thompson*
Interior Illustration: *Lori Heckelman*
Cover Photo: *Koji Kitagawa/Super Stock, Inc.*
Photo Editor: *Kathleen Olson*
Typesetting: *The Clarinda Company*
Cover Printing: *Color Dot*
Printing and Binding: *R. R. Donnelley & Sons, Crawfordsville*

COPYRIGHT © 1995
By Brooks/Cole Publishing Company
A Division of International Thomson Publishing Inc.
ITP The ITP logo is a trademark under license.

For more information, contact:

BROOKS/COLE PUBLISHING COMPANY
511 Forest Lodge Road
Pacific Grove, CA 93950
USA

International Thomson Publishing
Berkshire House 168-173
High Holborn
London WC1V 7AA
England

Thomas Nelson Australia
102 Dodds Street
South Melbourne, 3205
Victoria, Australia

Nelson Canada
1120 Birchmount Road
Scarborough, Ontario
Canada M1K 5G4

International Thomson Editores
Campos Eliseos 385, Piso 7
Col. Polanco
11560 México D.F. México

International Thomson Publishing Gmbh
Königwinterer Strasse 418
53227 Bonn
Germany

International Thomson Publishing Asia
221 Henderson Road #05-10
Henderson Building
Singapore 0315

International Thomson Publishing—Japan
Hirakawacho-cho Kyowa Building, 3F
2-2-1 Hirakawacho-cho
Chiyoda-ku, Tokyo 102
Japan

All rights reserved. No part of this work may be reproduced, stored in a retrieval system, or transcribed, in any form or by any means—electronic, mechanical, photocopying, recording, or otherwise—without the prior written permission of the publisher, Brooks/Cole Publishing Company, Pacific Grove, California 93950.

Printed in the United States of America.

10 9 8 7 6 5 4 3 2 1

Library of Congress Cataloging-in-Publication Data

Gustafson, R. David (Roy David), [date]
Beginning algebra / R. David Gustafson, Peter D. Frisk.—4th ed.
p. cm.
Includes index.
ISBN 0-534-24618-4
1. Algebra. I. Frisk, Peter D., [date]. II. Title.
QA152.2.G85 1994
512.9—dc20 94-29956
CIP

Photo credits: P. 4, The British Museum; **p. 81,** Ken Eward, Science Source; **p. 151,** Martin Bond, Science Photo Library; **p. 371,** Courtesy of Texas Instruments; **p. 415,** Courtesy of International Business Machines Corporation; and **p. 509,** Courtesy of Princeton University.

To
Caitlin Mallory Barth
Nicholas Connor Barth
Prescott Alexander Heighton
Laurel Marie Heighton
Daniel Mark Voeltner
and Tyler, too

PREFACE FOR THE INSTRUCTOR

Beginning Algebra, Fourth Edition, is written for students studying algebra for the first time and for those who need a review of basic algebra. It presents all of the topics associated with a first course in algebra, providing students with a thorough foundation in the basic skills of algebraic manipulation and equation solving.

Our goal was to write a book that

1. is enjoyable to read,

2. is easy to understand,

3. is relevant, and

4. will develop the necessary skills for success in future academic courses or on the job.

The Fourth Edition retains the basic philosophy and organization of the highly successful previous edition. However, we have made several improvements in line with the NCTM standards and the current trends in mathematics reform. For example, much more emphasis has been placed on problem solving.

Changes in the Fourth Edition

To make the book more enjoyable to read, we have:

- used a new and more open four-color design.
- enlarged section heads to make them easier to find. Sections are now divided into subsections.
- redrawn all art, most with added color. Art that accompanies application problems is now much more representational.

此为试读，需要完整PDF请访问：www.ertongbook.com

- placed application exercises in a two-column format. Each application now has a title.
- added a Perspective to each chapter. These Perspectives give brief, interesting stories that pertain to the material in the chapter.
- included pictures of famous mathematicians to provide a flavor of mathematics history.

To make the book easier to understand, we have:

- revised the explanations and simplified the language.
- added many more Author's Notes to explain more steps in the problem-solving process.
- added **Warning!** notices to warn students of common errors and misconceptions.
- added Getting Ready exercises at the beginning of each section. These exercises review skills that will be necessary in the section.
- added Oral Exercises before each exercise set. These problems enable the instructor to check student understanding before assigning homework.

To make the book more relevant, we have:

- opened each chapter with an application problem that can be solved by using the techniques developed in the chapter. The problem is solved in detail at the end of the chapter.
- strengthened the problem-solving emphasis in the book by adding many more application problems and distributing them throughout the book. Percent problems are now introduced early, providing meaningful applications, such as discount, percent change, markup and markdown, etc. An index of applications has been included.
- emphasized geometry throughout the text, particularly the concepts of perimeter, area, and volume.

To develop the necessary skills for success in future academic courses or on the job, we have:

- added Writing Exercises to each exercise set. These exercises will help students clarify ideas.
- added Something to Think About exercises to each exercise set. These exercises require extra thought and insight.
- added material using graphing calculators. Although this material is integrated throughout the book, it can be omitted with no loss in continuity.
- added Cumulative Review Exercises after every third chapter. These are in addition to the Review Exercises in each exercise set, the Chapter Review Exercises, the Sample Chapter Tests, and the Sample Final Examination.
- added a Project to each chapter, to be used for extended assignments or for cooperative learning.

Features of This Edition

3.6 Multiplying Polynomials

■ The FOIL Method ■ Multiplying Binomials to Solve Equations

GETTING READY *Simplify.*

1. $(2x)(3)$ **2.** $(3xxx)(x)$ **3.** $5x^2 \cdot x$ **4.** $8x^2x^3$

Use the distributive property to remove parentheses.

5. $3(x + 5)$ **6.** $x(x + 5)$ **7.** $4(y - 3)$ **8.** $2y(y - 3)$

In Section 3.1, we multiplied certain monomials by other monomials. To multiply $4x^2$ by $-2x^3$, for example, we use the commutative and associative properties of multiplication to group the numerical factors and the variable factors together and multiply.

$$\begin{aligned} 4x^2(-2x^3) &= 4(-2)x^2x^3 \\ &= -8x^5 \end{aligned}$$

EXAMPLE 1 **a.** $3x^5(2x^5) = 3(2)x^5x^5 = 6x^{10}$ **b.** $-2a^2b^3(5ab^2) = -2(5)a^2ab^3b^2 = -10a^3b^5$

c. $-4y^5z^2(2y^3z^3)(3yz) = -4(2)(3)y^5y^3yz^2z^3z = -24y^9z^6$ ■

The previous examples suggest the following rule.

Multiplying Two Monomials To multiply two monomials, first multiply the numerical factors and then multiply the variable factors.

To find the product of a monomi
we use the distributive property. To m
as follows:

$$\begin{aligned} 3x(x + 4) &= 3x \cdot x + 3x \cdot 4 \\ &= 3x^2 + 12x \end{aligned}$$

MATHEMATICS IN ECOLOGY

Many types of bacteria cannot survive in air. In one of the steps in waste treatment, sewage is exposed to the air by placing it in large, shallow, circular aeration pools.

One sewage processing plant has two such pools, with diameters of 40 and 42 meters. To meet new clean water standards, the plant must double its capacity, which includes building another aeration pool. How large a pool should the design engineers specify to double the capacity of this phase of sewage treatment?

■ ■ ■ ■ ■ ■ ■ After reading this chapter, you will be able to answer this question.

◀ Section heads are easier to find, and sections are divided into subsections.

◀ Getting Ready exercises help prepare the student for the material in the section.

◀ Examples worked on videotape are marked with an icon.

Each chapter begins with an application ▶ to motivate the material in the section.

Writing Exercises ■ *Write a paragraph using your own words.*

1. Explain why $a - b$ and $b - a$ are negatives of each other.
2. Explain how you would factor $x(a - b) + y(b - a)$.

Something to Think About ■

1. Factor $ax + ay + bx + by$ by grouping the first two terms and the last two terms. Then rearrange the terms as $ax + bx + ay + by$, and factor again by grouping the first two and the last two. Do the results agree?
2. Factor $2xy + 2xz - 3y - 3z$ by grouping in two different ways.

Review Exercises ■ *Simplify each expression. Write all results without using negative exponents.*

1. $u^3u^2u^4$
2. $\frac{y^6}{y^8}$
3. $\frac{a^3b^4}{a^2b^5}$
4. $(3x^5)^0$

◀ Writing Exercises, Something to Think About exercises, and Review Exercises follow each exercise set.

4.3 Factoring the Difference of Two Squares

■ Solving Equations

GETTING READY *Multiply the binomials.*

1. $(a + b)(a - b)$
2. $(2r + s)(2r - s)$
3. $(3x + 2y)(3x - 2y)$
4. $(4x^2 + 3)(4x^2 - 3)$

Whenever we multiply a binomial of the form $x + y$ by a binomial of the form $x - y$, we obtain another binomial:

$$(x + y)(x - y) = x^2 - y^2$$

Recommended	Gasoline	Oil
50 to 1	6 gal	16 oz

Are these instructions correct? (*Hint:* There are 128 ounces in 1 gallon.)

74. **Height of a tree** A tree casts a shadow of 26 feet at the same time as a 6-foot man casts a shadow of 4 feet. (See Illustration 2.) Find the height of the tree.

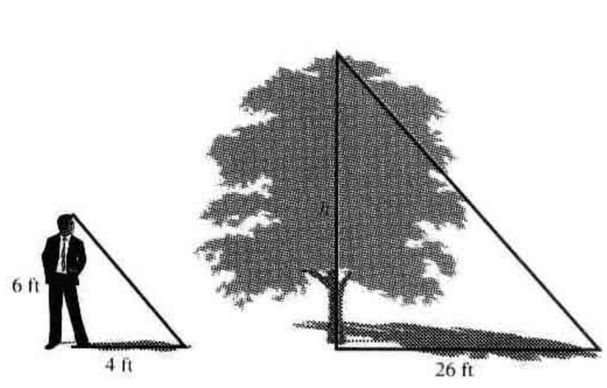


ILLUSTRATION 2

75. **Height of a flagpole** A man places a mirror on the ground and sees the reflection of the top of a flagpole, as in Illustration 3. The two triangles in the illustration are similar. Find the height, h, of the flagpole.

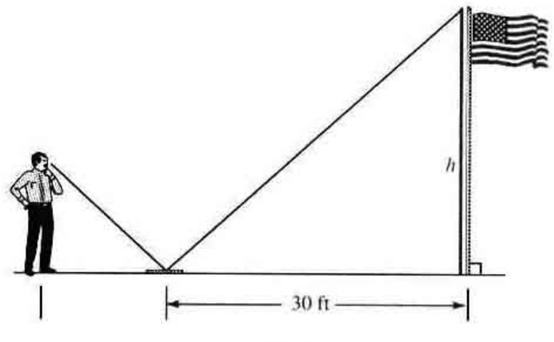


ILLUSTRATION 3

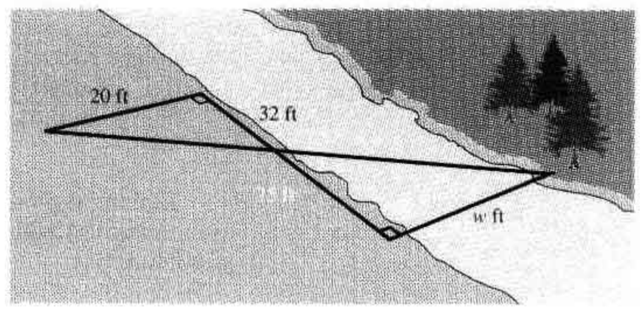


ILLUSTRATION 4

77. **Flight path** An airplane ascends 100 feet as it flies a horizontal distance of 1000 feet. How much altitude will it gain as it flies a horizontal distance of 1 mile? (See Illustration 5.) (*Hint:* 5280 feet = 1 mile.)

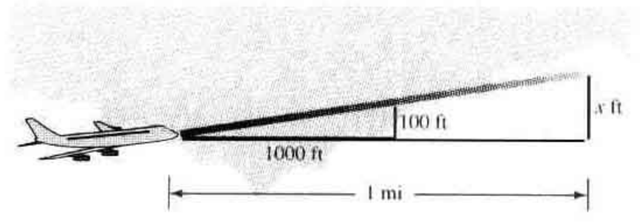


ILLUSTRATION 5

78. **Flight path** An airplane descends 1350 feet as it flies a horizontal distance of 1 mile. How much altitude is lost as it flies a horizontal distance of 5 miles?
79. **Ski runs** A $\frac{1}{2}$-mile long ski course falls 100 feet in every 300 feet of horizontal run. Find the height of the hill.
80. **Mountain travel** A mountain road ascends 375 feet in every 2500 feet of travel. By how much will the road rise in a trip of 10 miles?
81. **Recommended dosage** The recommended child's dose of the sedative hydroxine is 0.006 gram per kilogram of body mass. Find the dosage for a 30-kg child.

Application problems ▶ are in a two-column format.

All applications have a title. ▶

All art has been redrawn ▶ and made more colorful. ▶

◀ Projects are included for cooperative learning.

PROJECT ■ Pictures of Polynomial Products

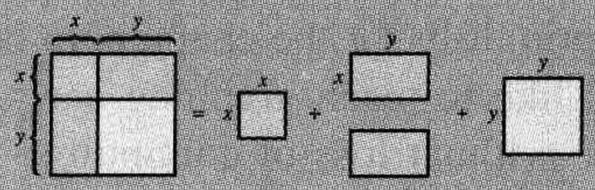


Figure 4-3

Because the length of each side of the largest square in Figure 4-3 is $x + y$, its area is $(x + y)^2$. This area is also the sum of four smaller areas, which illustrates the factorization

◀ Perspectives are found in each chapter.

■ PERSPECTIVE

Much of the mathematics we have inherited from the ancients is the result of teamwork. In a battle early in the 12th century, control of the Spanish city of Toledo was taken from the Mohammedans, who had ruled for four centuries. Libraries in this great city contained many books written in Arabic, full of knowledge that was unknown in Europe.

The Archbishop of Toledo wanted to share this knowledge with the rest of the world. He knew that these books should be translated into Latin, the universal language of scholarship. But what European scholar could read Arabic? The archbishop wasn't concerned. The citizens of Toledo could read both Arabic and Spanish, and most scholars of Europe could understand Spanish.

Teamwork saved the day. A citizen of Toledo read an Arabic text aloud, in Spanish. The scholar listened to the Spanish version and wrote in Latin. One of these scholars was an Englishman, Robert of Chester. It was he who translated al-Khowarazmi's book, *Ihm al-jabr wa'l muqabalah*, the beginning of the subject we now know as *algebra*.

Warning symbols ▶ appear throughout.

The fraction bar in the symbol $\frac{a}{b}$ indicates that a is to be divided by b. The number above the fraction bar is called the **numerator,** and the number below is called the **denominator.**

WARNING! Remember that the denominator of a fraction can never be 0.

There are three signs associated with every fraction: the sign of the fraction, the sign of the numerator, and the sign of the denominator.

All mathematics art ▶ has been made more colorful.

EXAMPLE 2 Graph the equation $y = -|x| + 2$.

Solution We make a table of values by substituting numbers for and finding the corresponding values of y. For example, if we substitute -2 for x, we get

$$y = -|x| + 2$$
$$y = -|-2| + 2$$
$$y = -(2) + 2$$
$$y = 0$$

After plotting the points listed in the table shown in Figure 6-24, we obtain the graph of the equation.

$y = -|x| + 2$

x	y
-3	-1
-2	0
-1	1
0	2
1	1
2	0
3	-1

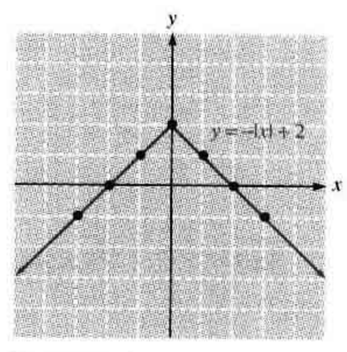


FIGURE 6-24 ■

Graphing calculators ▶ are included.

FIGURE 6-25

■ Graphing Calculators

So far, we have graphed equations by making a table of values and plotting points. This method is usually tedious and time-consuming. Fortunately, the task of graphing is made much easier when we use a graphing calculator.

Several brands of graphing calculators are available. Although we will use calculators to graph equations, we will not show the keystrokes of any specific brand. For these details, please consult your owner's manual.

All graphing calculators have a **viewing window,** used to display graphs (see Figure 6-25). To see the proper picture of a graph, we must often set the minimum and maximum values for the x- and y-coordinates. The standard RANGE settings of

$$\text{Xmin} = -10 \quad \text{Xmax} = 10 \quad \text{Ymin} = -10 \quad \text{Ymax} = 10$$

indicate that -10 is the minimum x-coordinate and the minimum y-coordinate that will be used in the graph, and that 10 is the maximum x- and y-coordinate that will

Organization

The book is designed primarily for the chapters to be taught in order. However, for instructors who would like to teach graphing early, the chapters can be taught in the following sequence without loss of continuity:

1, 2, 6, 7, 3, 4, 5, 8, 9

If graphing is taught early, a small number of Review Exercises will have to be omitted. For easy reference, these Review Exercises are noted in the margin of the Annotated Instructor's Edition.

Calculators

The use of calculators is assumed throughout the book. We believe that students should learn calculator skills in the mathematics classroom. They then will be prepared to use calculators in science and business classes, and for nonacademic purposes.

We also have included material on the graphing calculator. We recommend that instructors try it. However, it can be skipped without interrupting the flow of ideas.

The directions within each exercise set indicate which exercises require calculators. There are two symbols, for scientific calculators and for graphing calculators.

Accuracy

To guarantee the accuracy of the answers, each exercise has been worked by both authors and two other problem checkers. The manuscript has been read by many reviewers, and the printed pages have been read by many proofreaders.

Student Support

We have included many features that make the book very accessible to students.

Worked Examples The text contains more than 400 worked examples. Extensive use of explanatory notes makes the examples easy to follow.

Chapter Summaries Each chapter concludes with a summary of key words, key ideas, and formulas used in the chapter.

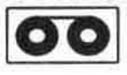
Author's Notes Author's notes explain the steps in the solutions of most examples.

Functional Use of Color For easy reference, definitions and theorems are boxed in blue. Strategy boxes are green. In addition, the book uses color to highlight terms and expressions that you would point to in a classroom discussion.

End Papers Key formulas and ideas are listed inside the front and back covers for easy reference.

Exercises The book includes more than 4500 carefully graded exercises, with answers to the odd-numbered exercises provided in an appendix.

Systematic Review Each exercise set is followed by Review Exercises. In addition, there are Chapter Review Exercises, Chapter Tests, Cumulative Review Exercises, and a Sample Final Examination.

Videotapes Many examples in the book are taught on videotape. These examples are marked with a symbol  in the book.

Computer Software Students can get additional practice with BCX software. BCX drills students on problems similar to those in the book. BCX will give hints and show complete solutions when necessary.

Ancillaries for the Instructor

Annotated Instructor's Edition The Annotated Instructor's Edition has the answer to every exercise printed next to the exercise. Annotations in the margin give alternate methods of presenting material, as well as teaching hints and strategies.

Test Manual
Teresa Bittner

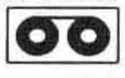
The *Test Manual* contains four ready-to-use forms of every chapter test. Two of the tests are free response and two are multiple choice.

Computer Testing Software
Teresa Bittner

Available with the book are two extensive electronic question banks, one free-response and one multiple-choice. Each bank contains approximately 1700 questions and is available for either IBM-compatible or Macintosh computers. The testing program gives you all of the features of state-of-the-art word processors and more, including the ability to see all technical symbols, fonts, and formatting on the screen just the way they will appear when printed. The question banks can be edited.

EXPTEST™ runs on IBM and compatible computers.
ExamBuilder™ runs on Macintosh computers.

Transparencies Color transparencies of key graphics from the book are available to assist the instructor in the classroom.

Videotapes A set of 18 book-specific videotapes is available without charge for adoptions of 100 books or more. The videos include the solutions of all examples in the book marked with a  symbol. The instructors appearing on the videotapes are David Gustafson, Peter Frisk (the authors), and Diane Koenig.

Computer-Aided Instruction
Teresa Bittner

BCX is book-specific tutorial software that drills students on problems similar to those found in the book. There is a set of questions for each section in the book. BCX provides hints to students and, if students cannot answer a question correctly, the complete solution will be displayed. BCX monitors student progress and includes a reporting system.

此为试读,需要完整PDF请访问: www.ertongbook.com

Ancillaries for the Student

Study Guide
George Grisham and Robert Eicken

The *Study Guide* provides more explanation, worked examples, practice problems, and practice tests. Available for sale at your college bookstore.

Student Solutions Manual
Diane Koenig

The *Student Solutions Manual* gives complete solutions for the odd-numbered exercises in the book. Available for sale at your college bookstore.

PREFACE FOR THE STUDENT

Congratulations. You now own a state-of-the-art textbook that has been written especially for you. To use the book properly, read it carefully, do the exercises, and check your progress with the Review Exercises and the Chapter Tests. Be sure to read and use the following hints on studying algebra.

A *Student Solutions Manual* is available, for sale at your college bookstore, that contains solutions to the odd-numbered exercises. A *Study Guide* that contains additional explanations, worked examples, and practice problems is also available for sale.

When you finish this course, consider keeping your book. It is the single reference source that will keep the information that you have learned at your fingertips. You may need this reference material in future mathematics, science, or business courses.

We wish you well.

Hints on Studying Algebra

The phrase "Practice makes perfect" is not quite true. It is *perfect* practice that makes perfect. For this reason, it is important that you learn how to study algebra to get the most out of this course.

Although we all learn differently, there are some hints on how to study algebra that most students find useful. Here is a list of some things you should consider.

Plan a Strategy for Success

To get where you want to be, you need a goal and a plan. Set a goal of passing this course with a grade of A or B. To meet this goal, you must have a good plan. Your plan should include several points:

- getting ready for class,
- attending class,

- doing homework,
- arranging for special help when you need it, and
- having a strategy for taking tests.

Getting Ready for Class

To get the most out of every class period, you will need to prepare. One of the best things that you can do is to read the material in the book before your instructor discusses it. You may not understand all of what you read, but you will be better able to understand it when your instructor presents the material in class.

Be sure to do your work every day. If you get behind and attend class without understanding prior material, you will be lost and your classroom time will be wasted. Even worse, you will become frustrated and discouraged. Promise yourself that you will always prepare for class and keep your promise.

Attending Class

The classroom experience is your opportunity to learn from your instructor. Make the most of it by attending every class. Sit near the front of the room where you can see and hear well and where you won't be distracted. It is your responsibility to follow the instructor's discussion, even though that might be hard work.

Pay attention to your instructor and jot down the important things that he or she says. However, do not spend so much time taking notes that you fail to concentrate on what your instructor is explaining. It is much better to listen and understand the *big picture* than it is merely to copy solutions to problems.

Don't be afraid to ask questions. If something is unclear to you, it is probably unclear to other students as well. They will appreciate your willingness to ask. Besides, asking questions will make you an active participant in class. This will help you pay attention and keep you alert and involved.

Doing Homework

Everyone knows that it requires practice to excel at tennis, master a musical instrument, or learn a foreign language. It also requires practice to learn mathematics. Since *practice* in mathematics is the homework, homework is your opportunity to practice skills and experiment with ideas.

It is very important to pick a definite time to study and do homework. Set a formal schedule and stick to it. Try to study in a place that is comfortable and quiet. If you can, do some homework shortly after class or at least before you forget what was discussed in class. This quick follow-up will help you remember the skills and concepts your instructor taught that day.

Study Sessions

Each formal study session should include three parts:

1. Begin every study session with a review period. Look over previous chapters and see if you can do a few problems from previous sections. Keeping old skills alive will greatly reduce the amount of time that you will need to cram for tests.

2. After reviewing, read the assigned material. Resist the temptation of diving into the problems without reading and understanding the examples. Instead, work

the examples with pencil and paper. Only after you completely understand the underlying principles behind them should you try to work the problems.

Once you begin to work the problems, check your answers with the printed answers in the back of the book. If one of your answers differs from the printed answer, see if you can reconcile the two. Sometimes answers can have more than one form. If you still believe that your answer is incorrect, compare your work to the example in the book that most closely resembles the problem and try to find your mistake. If you cannot find an error, consult the *Student Solutions Manual*. If nothing works, mark the problem and ask about it during your next class meeting.

3. After you complete the written assignment, read the next section. That preview will be helpful when you hear that material discussed during the next class period.

You probably know that the rule of thumb for doing homework is two hours of homework for every hour spent in class. If mathematics is hard for you, plan on spending even more time on homework.

To make homework more enjoyable, study with one or more friends. The interaction will clarify ideas and help you remember them. If you must study alone, try talking to yourself. A good study technique is to explain the material to yourself.

Arranging for Special Help

Take advantage of any special help available from your instructor. Often, your instructor can clear up difficulties in a very short period of time.

Find out if your college has a free tutoring program. Peer tutors also can be of great help. Be sure to use the videotapes and BCX software.

Taking Tests

Students often get nervous before taking a test because they are afraid that they will not do well. The most common reason for this fear is that students are not confident that they know the material.

To build confidence in your ability to work tests, rework many of the problems in the exercise sets, work the Review Exercises at the end of each chapter, and work the Chapter Tests. Check all your answers with the answers printed at the back of the book.

Then guess what the instructor will ask and make up your own tests and work them. Once you know your instructor, you will be surprised at how good you can get at picking test questions. With this preparation, you will have some idea of what will be on the test and will have more confidence in your ability to do well.

When you take a test, work slowly and deliberately. Scan the test and first work the easy problems that you know you can do. This will build confidence. Tackle the hardest problems last.

ACKNOWLEDGMENTS

We are grateful to the following people who have reviewed the book at various stages of its development:

Helen Banes
Kirkwood Community College

Theresa Barrie
Texas Southern University

Robert Billups
Citrus Community College

Elaine D. Bouldin
Middle Tennessee State University

David Byrd
Enterprise State Junior College

Baruch Cahlon
Oakland University

Don Cohen
SUNY-Cobleskill

Patricia Cooper
St. Louis Community College-Park Forest

Sally Copeland
Johnson County Community College

Elwin Cutler
Ferris State University

Russell M. Day
Illinois Central College

Elias Deeba
University of Houston-Downtown

Edward Doran
Front Range Community College

Arthur Dull
Diablo Valley College

Robert Eicken
Illinois Central College

Marc Glucksman
El Camino College

George Grisham
Bradley University

Robert G. Hammond
Utah State University

Mitzy Johnson
Northeast Mississippi Community College

Robert Keicher
Delta College

Katherine McLain
Consumnes River College

Laurie McManus
St. Louis Community College-Meramac

Wayne Milloy
Crafton Hills College

Myrna Mitchell
Pima Community College

John Monroe
University of Akron

Carol M. Nessmith
Georgia Southern University

Kent Neuerburg
Consumnes River College

Paul Peck
Glenville State College

Thea Prettyman
Essex Community College

Michael Rosenthal
Florida International University

Jack W. Rotman
Lansing Community College

Irwin Schochetman
Oakland University

Erik A. Schreiner
Western Michigan University

Kenneth Seydel
Skyline College

David Sicks
Olympia College

Willie Taylor
Texas Southern University

Douglas Tharp
University of Houston-Downtown

Lynn E. Tooley
Bellevue Community College

Gary VanVelsir
Anne Arundel Community College

Gerry C. Vidrine
Louisiana State University

Rosalyn Wells
Georgia State University

Clifton T. Whyburn
University of Houston

Hette Williams
Broward Community College

We wish to thank Diane Koenig and Robert Hessel, who read the entire manuscript and worked every problem. We also wish to thank Bill Hinrichs, Jerry Frang, George Mader, Michael Welden, Jennifer Dollar, and Rob Clark for their helpful suggestions. We give special thanks to Gary Ostedt, Ellen Brownstein, David Hoyt, Kelly Shoemaker, Lori Heckelman, Kathleen Olson, Audra Silverie, and Carol Benedict for their assistance in the production process.

R. David Gustafson
Peter D. Frisk

此为试读,需要完整PDF请访问: www.ertongbook.com