

# Basic College Mathematics

Eighth Edition

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ANNOTATED  
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*In appreciation of your lasting support and never-ending enthusiasm: family, colleagues, and more than a generation of motivated students.*

*Stan Salzman*

*This book is dedicated to my dad, who always told me when I was young that girls could learn math, and to my students at Minneapolis Community and Technical College, who keep me in touch with the real world.*

*Diana Hestwood*



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The eighth edition of *Basic College Mathematics* continues our ongoing commitment to provide the best possible text and supplements package that will help instructors teach and students succeed. To that end, we have addressed the diverse needs of today's students by integrating activities to help students improve their study skills, an attractive design, updated applications and graphs, helpful features, careful explanation of concepts, and an expanded package of supplements and study aids. We have also responded to the suggestions of users and reviewers and have added many new examples and exercises based on their feedback.

The text is designed to help students achieve success in a developmental mathematics program. It provides the necessary review and coverage of whole numbers, fractions, decimals, ratio and proportion, percent, and measurement, as well as an introduction to algebra and geometry, and a preview of statistics. This text is part of a series that also includes the following books:





- *Essential Mathematics*, Third Edition, by Lial and Salzman
- *Prealgebra*, Fourth Edition, by Lial and Hestwood
- *Introductory Algebra*, Ninth Edition, by Lial, Hornsby, and McGinnis
- *Intermediate Algebra*, Ninth Edition, by Lial, Hornsby, and McGinnis
- *Introductory and Intermediate Algebra*, Fourth Edition, by Lial, Hornsby, and McGinnis
- *Prealgebra and Introductory Algebra*, Third Edition, by Lial, Hestwood, Hornsby, and McGinnis
- *Developmental Mathematics: Basic Mathematics and Algebra*, Second Edition, by Lial, Hornsby, McGinnis, Salzman, and Hestwood

### Hallmark Features

We believe students and instructors will welcome the following helpful features.

- ▶ **Chapter Openers** New and updated chapter openers feature real-world applications of mathematics that are relevant to students and tied to specific material within the chapters. Examples of topics include work/career applications, finding the best buy on cell phone service, home improvements, recipes, weather, fishing, and astronomy. (See Chapter 2, p. 113.)
- ▶ **Real-Life Applications** We are always on the lookout for interesting data to use in real-life applications. As a result, we have included many new or updated examples and exercises throughout the text that focus on real-life applications of mathematics. Students are often asked to find data in a table, chart, graph, or advertisement. (See pp. 158 and 160.) These applied problems provide an up-to-date flavor that will appeal to and motivate students.
- ▶ **Figures and Photos** Today's students are more visually oriented than ever. Thus, we have made a concerted effort to include mathematical figures, diagrams, tables, and graphs whenever possible. (See p. 158.) Many of the graphs use a style similar to that seen by students in today's print and electronic media. Photos have been incorporated to enhance applications in examples and exercises. (See p. 159.)
- ▶ **Emphasis on Problem Solving** Introduced at the end of Chapter 1, our six-step process for solving application problems is integrated throughout the text. The six steps, *Read, Plan,*

*Estimate, Solve, State the Answer, and Check*, are emphasized in boldface type and repeated in specific problem-solving examples in Chapters 1, 2, 3, 5, 6, 7, and 9. (See p. 164.)

- ▶ **Learning Objectives** Each section begins with clearly stated, numbered objectives, and the material within sections is keyed to these objectives so that students know exactly what concepts are covered. (See p. 114.)
- ▶ **Cautions and Notes** These color-coded and boxed comments, one of the most popular features of previous editions, warn students about common errors and emphasize important ideas throughout the exposition. (See pp. 145–146.) Cautions are highlighted in yellow and Notes are highlighted in purple.
- ▶  **Calculator Tips** These optional tips, marked with a red calculator icon, offer helpful information and instruction for students using calculators in the course. (See p. 270.)
- ▶ **Margin Problems** Margin problems, with answers immediately available on the bottom of the page, are found in every section of the text. (See pp. 121–122.) This key feature allows students to immediately practice the material covered in the examples in preparation for the exercise sets.
- ▶ **Ample and Varied Exercise Sets** The text contains a wealth of exercises to provide students with opportunities to practice, apply, connect, and extend the skills they are learning. Numerous illustrations, tables, graphs, and photos help students visualize the problems they are solving. Problem types include skill building, writing, estimation, and calculator exercises, as well as applications and correct-the-error problems. In the Annotated Instructor's Edition of the text, the writing exercises are marked with an icon for writing  so that instructors may assign these problems at their discretion. Exercises suitable for calculator work are marked in both the student and instructor editions with a calculator icon . (See pp. 177–180.) Students can watch an instructor work through the complete solution for all exercises marked with a DVD icon  on the Videos on DVD.
- ▶ **Relating Concepts Exercises** These sets of exercises help students tie concepts together and develop higher level problem-solving skills as they compare and contrast ideas, identify and describe patterns, and extend concepts to new situations. (See p. 152.) These exercises make great collaborative activities for pairs or small groups of students.
- ▶ **Summary Exercises** With the addition of two more sets of summary exercises, all chapters now include this helpful mid-chapter review. These exercises provide students with the all-important *mixed* practice they need at these critical points in their skill development. (See pp. 141–142.)
- ▶ **Ample Opportunity for Review** Each chapter ends with a Chapter Summary featuring: Key Terms with definitions and helpful graphics, New Formulas, New Symbols, Test Your Word Power, and a Quick Review of each section's content with additional examples. Also included is a comprehensive set of Chapter Review Exercises keyed to individual sections, a set of Mixed Review Exercises, and a Chapter Test. Students can watch an instructor work out the full solutions to the Chapter Test problems on the new Chapter Test Prep Video CD. Beginning with Chapter 2, each chapter concludes with a set of Cumulative Review Exercises. (See pp. 183–194.)
- ▶ **Test Your Word Power** This feature, incorporated into each Chapter Summary, helps students understand and master mathematical vocabulary. Key terms from the chapter are presented along with four possible definitions in a multiple-choice format. Answers and examples illustrating each term are provided. (See p. 184.)



### What's New in This Edition

The scope and sequence of topics in *Basic College Mathematics* has stood the test of time and rates highly with our reviewers. Therefore, you will find the table of contents intact, making the transition to the new edition easier.

- **Examples and Exercises** Throughout the text, examples and exercises have been adjusted or replaced to reflect current data and practices. Applications have been updated and cover a wider variety of topics such as the fields of technology, ecology, and health sciences.
- **Summary Exercises** Two new sets of Summary Exercises have been added; all chapters now include these helpful sets of review exercises. The Summary Exercises are positioned within the chapters to provide critically important mixed review so that students are better prepared to progress to new material.
- **Pointers** Pointers have been added to examples to provide students with important on-the-spot reminders and warnings about common pitfalls. (See pp. 133 and 164.)
- **Math in the Media** Each one-page activity presents a relevant look at how mathematics is used in the media. Designed to help instructors answer the often-asked question, “When will I ever use this stuff?,” these activities ask students to read and interpret data from newspaper articles, the Internet, and other familiar, real-world sources. (See pp. 156 and 166.) The activities are well suited to collaborative work or they can be completed by individuals or used for open-ended class discussions.
- **Solutions** Solutions to selected section exercises have been added to the back of the book (following the Answers section). This provides students with easily accessible step-by-step help in solving the exercises that are most commonly missed. Solutions are provided for the exercises marked with a square of blue color around the exercise number, for example, **15**.
- **Study Skills** There is an increased emphasis on study skills. Poor study skills are a major reason why students do not succeed in mathematics. A few generic tips sprinkled here and there are not enough to help students change their behavior. This text includes 13 carefully designed activities, integrated into the text material, that cover note taking, homework, study cards, math anxiety, test preparation, test taking, preparing for a final exam, and more. (See pp. 139–140, 181–182, and 191–192.) Most are located within the first few chapters so that students can use the skills throughout the course. (See the Table of Contents for titles and locations.) The first activity, “Your Brain *Can* Learn Mathematics,” explains *how* the brain actually learns and remembers so that students understand *why* the study skills will help them succeed in the course.
- **Chapter Test Prep Video CD** The Chapter Test Prep Video CD provides students with the opportunity to watch instructors work through step-by-step solutions to all the Chapter Test exercises from the textbook. The Chapter Test Video CD is included with each new student text.

### What Supplements Are Available?

For a comprehensive list of the supplements and study aids that accompany *Basic College Mathematics*, Eighth Edition, see pages x and xi.

## STUDENT SUPPLEMENTS

### Student's Solutions Manual

- By Jeffery A. Cole, *Anoka-Ramsey Community College*
- Provides detailed solutions to the odd-numbered section-level exercises and to all margin, Relating Concepts, Summary, Chapter Review, Chapter Test, and Cumulative Review Exercises


ISBNs: 0-321-57464-8, 978-0-321-57464-0

### Worksheets for Classroom or Lab Practice

- Extra practice exercises for every section of the text with ample space for students to show their work
- These lab- and classroom-friendly workbooks also list the learning objectives and key vocabulary terms for every text section, along with vocabulary practice problems

ISBNs: 0-321-57470-2, 978-0-321-57470-1

### Videos on DVD

- Features an engaging team of lecturers
- Complete set of lectures for each section of the text on DVD for student use at home or on campus
- Ideal for distance learning or supplemental instruction
- Include optional English and Spanish subtitles
- Students can watch an instructor work through the complete solutions for all exercises marked with a DVD icon 

ISBNs: 0-321-60782-1, 978-0-321-60782-9

### InterAct Math Tutorial Website [www.interactmath.com](http://www.interactmath.com)



- Online practice and tutorial help
- Retry an exercise with new values each time for unlimited practice and mastery
- Every exercise is accompanied by an interactive guided solution that gives helpful feedback when an incorrect answer is entered
- View the steps of worked-out sample problems similar to those in the text

### Chapter Test Prep Video CD

- Watch instructors work through step-by-step solutions to all the Chapter Test exercises from the textbook.
- Included with each new student text
- English subtitles available to accompany the videos

## INSTRUCTOR SUPPLEMENTS

### Annotated Instructor's Edition

- Provides answers to all text exercises in color next to the corresponding problems
- Icons identify writing  and calculator  exercises

ISBNs: 0-321-57234-3, 978-0-321-57234-9

### Instructor's Solutions Manual

- By Jeffery A. Cole, *Anoka-Ramsey Community College*
- Provides complete solutions to all exercises in the text

ISBNs: 0-321-57460-5, 978-0-321-57460-2

### Additional Teaching Resources

- Includes resources to help both new and adjunct faculty with course preparation and classroom management by offering helpful teaching tips correlated to the sections of the text.

Available for download at [www.pearsonhighered.com](http://www.pearsonhighered.com)

### Instructor's Resource Manual with Tests

- By James Ball, *Indiana State University*
- The resource manual contains a test bank with two diagnostic pretests, six free-response and two multiple-choice test forms per chapter, and two final exams.
- The manual also contains a mini-lecture for each section of the text with objectives, key examples, and teaching tips.
- A correlation guide from the seventh to the eighth edition and phonetic spellings for all key terms in the text are also included.

ISBNs: 0-321-57461-3, 978-0-321-57461-9

### PowerPoint Lecture Slides

- Present key concepts and definitions from the text
- Available for download at [www.pearsonhighered.com](http://www.pearsonhighered.com)

### TestGen ([www.pearsonhighered.com/testgen](http://www.pearsonhighered.com/testgen))

- Enables instructors to build, edit, print, and administer tests using a computerized bank of questions developed to cover all text objectives
- Algorithmically based, TestGen allows instructors to create multiple but equivalent versions of the same question or test with the click of a button
- Instructors can also modify test bank questions or add new questions
- Tests can be printed or administered online

**Pearson Math Adjunct Support Center** ([www.pearsonhighered.com/math-adjunct.html](http://www.pearsonhighered.com/math-adjunct.html)) is staffed by qualified instructors with more than 50 years of combined experience at both the community college and university levels. Assistance is provided for faculty in the following areas:

- Suggested syllabus consultation
- Tips on using materials packed with your book
- Book-specific content assistance
- Teaching suggestions, including advice on classroom strategies

## Available for Students and Instructors



**MyMathLab®** MyMathLab is a series of text-specific, easily customizable online courses for Pearson Education's textbooks in mathematics and statistics. Powered by CourseCompass™ (our online teaching and learning environment) and MathXL® (our online homework, tutorial, and assessment system), MyMathLab gives you the tools you need to deliver all or a portion of your course online, whether your students are in a lab setting or working from home. MyMathLab provides a rich and flexible set of course materials, featuring free-response exercises that are algorithmically generated for unlimited practice and mastery. Students can also use online tools, such as video lectures, animations, and a multimedia textbook, to independently improve their understanding and performance. Instructors can use MyMathLab's homework and test managers to select and assign online exercises correlated directly to the textbook, and they can also create and assign their own online exercises and import TestGen tests for added flexibility. MyMathLab's online gradebook—designed specifically for mathematics and statistics—automatically tracks students' homework and test results and gives the instructor control over how to calculate final grades. Instructors can also add offline (paper-and-pencil) grades to the gradebook. MyMathLab also includes access to the **Pearson Tutor Center** ([www.pearson tutorservices.com](http://www.pearson tutorservices.com)). The Tutor Center is staffed by qualified mathematics instructors who provide textbook-specific tutoring for students via toll-free phone, fax, e-mail, and interactive Web sessions. MyMathLab is available to qualified adopters. For more information, visit our Web site at [www.mymathlab.com](http://www.mymathlab.com) or contact your sales representative.



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**MathXL® Tutorials on CD** This interactive tutorial CD-ROM provides algorithmically generated practice exercises that are correlated at the objective level to the exercises in the textbook. Every practice exercise is accompanied by an example and a guided solution designed to involve students in the solution process. Selected exercises may also include a video clip to help students visualize concepts. The software provides helpful feedback for incorrect answers and can generate printed summaries of students' progress.

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The ultimate measure of this textbook's success is whether it helps students master basic skills, develop problem-solving techniques, and increase their confidence in learning and using mathematics. In order for us, as authors, to know what to keep and what to improve for the next edition, we need to hear from you, the instructor, and you, the student. Please tell us what you like and where you need additional help by sending an e-mail to [math@pearson.com](mailto:math@pearson.com). We appreciate your feedback!

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