## Table of Contents

CHAPTER 1 The Real Number System and Geometry<br>Study Strategies: An Introduction to the P.O.W.E.R. Framework<br>Study Strategies: Using P.O.W.E.R. to Succeed in Your Course 4

> Section 1.3 gives students the opportunity to relearn and practice geometry before getting to applications later in the book that will require this knowledge. It helps them make connections to other math skills they will need and breaks down the information into smaller pieces for easier understanding.

$$
\begin{array}{ll}
\text { Section 1.1 } & \text { Review of Fractions } 6 \\
\text { Section 1.2 } & \text { Exponents and Order of } \\
& \text { Operations } 20
\end{array}
$$

Section 1.3 Geometry Review 26
Section 1.4 Sets of Numbers and Absolute Value 38
Section 1.5 Addition and Subtraction of Real Numbers 47
Section 1.6 Multiplication and Division of Real Numbers 55
Section 1.7 Properties of Real Numbers 63
Section 1.8 Simplifying Algebraic
Expressions 73
Group Activity 80 emPOWERme: Measuring Your Math Confidence 81
Chapter Summary 82
Chapter 1 Review Exercises 86
Chapter 1 Test 88

CHAPTER 2 Linear Equations and Inequalities in One Variable 90
Study Strategies: How to Read Math (and Other) Textbooks 91

## Section 2.4 begins by teaching students the arithmetic before relating it to algebra. If students can't understand the arithmetic, they will find it next to impossible to solve an algebra problem.

$\begin{array}{ll}\text { Section 2.1 Solving Linear Equations } \\ & \text { Part I } 93\end{array}$
Section 2.2 Solving Linear Equations Part II 104
Section 2.3 Applications of Linear Equations 115
Section 2.4 Applications Involving Percents 125
Section 2.5 Geometry Applications and Solving Formulas 137
Section 2.6 Applications of Linear Equations to Proportions, Money Problems, and $d=r t \quad 152$
Section 2.7 Linear Inequalities in One Variable 165
Group Activity 177
emPOWERme: Discover Your
Reading Style 178
Chapter Summary 179
Chapter 2 Review Exercises 183
Chapter 2 Test 185
Cumulative Review for
Chapters 1-2 186

## CHAPTER 3 Linear Equations in Two Variables 188

Study Strategies: Time Management 189
Section 3.1 Introduction to Linear Equations in Two Variables 191
Section 3.2 Graphing by Plotting Points and Finding Intercepts 205
Section 3.3 The Slope of a Line 216
Section 3.4 The Slope-Intercept Form of a Line 227
Section 3.5 Writing an Equation of a Line 236
Section 3.6 Introduction to Functions 248
Group Activity 262
emPOWERme: Find Your Time Style 264
Chapter Summary 265
Chapter 3 Review Exercises 270
Chapter 3 Test 273
Cumulative Review for
Chapters 1-3 275
CHAPTER 4 Systems of LinearEquations and Inequalitiesin Two Variables 276
Study Strategies: Taking Notes in Class ..... 277
Section 4.1 Solving Systems by Graphing ..... 279
Section 4.2 Solving Systems by the Substitution Method 290
Section 4.3 Solving Systems by theElimination Method 298Putting It All Together 307Section 4.4 Applications of Systems ofTwo Equations 309
Section 4.5 Linear Inequalities in TwoVariables 322Group Activity 333
emPOWERme: Evaluate YourClass Notes 334
Chapter Summary ..... 335
Chapter 4 Review Exercises ..... 339
Chapter 4 Test ..... 341
Cumulative Review forChapters 1-4 342
CHAPTER 5 Rules of Exponents ..... 343
Study Strategies: Taking Math Tests ..... 344
Rules of Exponents is one of the more difficulttopics for students. We give the material its ownchapter and then break the topic out into moremanageable pieces. Students are given a chanceto practice the easier parts first before progressingto harder topics.
Section 5.1 Basic Rules of Exponents Part A: The Product Rule and Power Rules 346 Part B: Combining the Rules 353
Section 5.2 Integer Exponents Part A: Real-Number Bases ..... 355
Part B: Variable Bases ..... 358
Section 5.3 The Quotient Rule 362
Putting It All Together ..... 365
Section 5.4 Scientific Notation ..... 368
Group Activity ..... 376
emPOWERme: Math Test
Preparation Checklist ..... 377
Chapter Summary ..... 378
Chapter 5 Review Exercises ..... 379
Chapter 5 Test ..... 381
Cumulative Review fo

## CHAPTER 6 Polynomials 382

Study Strategies: Doing Math Homework 383
Section 6.1 Addition and Subtraction of Polynomials 386
Section 6.2 Multiplication of Polynomials 396
Section 6.3 Special Products 402
Section 6.4 Division of Polynomials 408
Group Activity 417 emPOWERme: What's Different About College? 418
Chapter Summary 420
Chapter 6 Review Exercises 421
Chapter 6 Test 423
Cumulative Review for
Chapters 1-6 424

## CHAPTER 7 Factoring

Polynomials 426
Study Strategies: Making a Class
Schedule 427

Section 7.2 helps students make the connection between arithmetic and factoring by starting off with exercises that are purely arithmetic.

## Section 7.1 The Greatest Common Factor and Factoring by Grouping 430

Section 7.2 Factoring Trinomials of the Form $x^{2}+b x+c 440$
Section 7.3 Factoring Trinomials of the Form $a x^{2}+b x+c(a \neq 1) \quad 447$
Section 7.4 Factoring Special Trinomials and Binomials 455
Section 7.5 Factoring the Sum and Difference of Two Cubes 462
Putting It All Together 466
Section 7.6 Solving Quadratic Equations by Factoring 469
Section 7.7 Applications of Quadratic Equations 478
Group Activity 488
emPOWERme: Identify Major
Attractions 491
Chapter Summary 493
Chapter 7 Review Exercises 495
Chapter 7 Test 497
Cumulative Review for
Chapters 1-7 498

## CHAPTER 8 Rational Expressions 499

Study Strategies: Know Your School 500

Finding the Least Common Denominator is a tough concept so we've broken it down and given it its own section, 8.3. If students have a chance to practice finding the least common denominator first, they will be more successful when they move on to Section 8.4

Section 8.1 Simplifying Rational
Expressions 504

Section 8.2 Multiplying and Dividing Rational Expressions 516
Section 8.3 Finding the Least Common Denominator 522
Section 8.4 Adding and Subtracting Rational Expressions 530 Putting It All Together 538
Section 8.5 Simplifying Complex Fractions 543
Section 8.6 Solving Rational Equations 552
Section 8.7 Applications of Rational Equations and Variation 563
Group Activity 578
emPOWERme: My School 579
Chapter Summary 580
Chapter 8 Review Exercises 585
Chapter 8 Test 588
Cumulative Review for
Chapters 1-8 589

## CHAPTER 9 Roots and Radicals 590

Study Strategies: Working with a<br>Study Group 591

We've broken down the material into bite-sized pieces before combining operations in Section 9.4.
Section 9.1 Finding Roots ..... 595
Section 9.2 Simplifying Radicals: The Product and Quotient Rules ..... 605
Section 9.3 Adding and SubtractingRadicals617
Section 9.4 Combining Operations on Radicals 622
Section 9.5 Dividing Radicals ..... 628
Section 9.6 Solving Radical Equations 640
Section 9.7 Rational Exponents ..... 650
Group Activity ..... 659
emPOWERme: My Study
Chapter Summary ..... 661
Chapter 9 Review Exercises ..... 664
Chapter 9 Test 666
Chapters 1-9 667
CHAPTER 10 Quadratic Equations ..... 668
Study Strategies: Creating Visuals ..... 669
Section 10.1 Solving Quadratic Equations
Using the Square RootProperty 671
Section 10.2 Solving Quadratic Equations
by Completing the Square ..... 678
Section 10.3 Solving Quadratic EquationsUsing the Quadratic Formula 686
Putting It All Together ..... 694
Section 10.4 Graphs of Quadratic
Equations ..... 697
Section 10.5 Complex Numbers ..... 705
Group Activity ..... 714
emPOWERme: What's Your
Learning Style? ..... 715
Chapter Summary ..... 717
Chapter 10 Review Exercises ..... 720
Chapter 10 Test ..... 721
Cumulative Review for
Chapters 1-10 ..... 722

## APPENDIX

Section A. 1 Decimals ..... A-1
Section A. 2 Percents A-12
Section A. 3 Compound Inequalities inOne Variable A-19Section A. 4 Solving Systems of Three Equations
and Applications A-27
Section A. 5 Compound Linear Inequalities in
Two Variables Containing Or A-37
Student Answer Appendix ..... SA-1
Instructor Answer Appendix
(Annotated Instructor
Edition only) ..... IA-1

