



# Brief Contents

<b>1</b>	<b>WHOLE NUMBERS</b>	<b>1</b>
<b>2</b>	<b>OPERATIONS WITH INTEGERS</b>	<b>87</b>
<b>3</b>	<b>SOLVING EQUATIONS</b>	<b>139</b>
<b>4</b>	<b>FRACTIONS</b>	<b>201</b>
<b>5</b>	<b>DECIMALS</b>	<b>289</b>
<b>6</b>	<b>RATIO AND PROPORTION</b>	<b>377</b>
<b>7</b>	<b>PERCENT</b>	<b>427</b>
<b>8</b>	<b>MEASUREMENT</b>	<b>491</b>
<b>9</b>	<b>LINEAR EQUATIONS WITH APPLICATIONS</b>	<b>561</b>
<b>10</b>	<b>EXPONENTS AND POLYNOMIALS</b>	<b>633</b>
<b>11</b>	<b>FACTORING POLYNOMIALS</b>	<b>707</b>
<b>12</b>	<b>RATIONAL EXPRESSIONS AND EQUATIONS</b>	<b>783</b>
<b>13</b>	<b>GRAPHING LINEAR EQUATIONS WITH APPLICATIONS</b>	<b>845</b>
<b>14</b>	<b>SYSTEMS OF EQUATIONS</b>	<b>957</b>
<b>15</b>	<b>RADICAL EXPRESSIONS AND EQUATIONS</b>	<b>1011</b>
<b>16</b>	<b>QUADRATIC EQUATIONS AND FUNCTIONS</b>	<b>1065</b>





# Contents

## 1

### WHOLE NUMBERS 1

- 1.1 Place Value and Names for Numbers 2
- 1.2 Addition with Whole Numbers, and Perimeter 12
- 1.3 Subtraction with Whole Numbers 25
- 1.4 Rounding Numbers, Estimating Answers, and Displaying Information 35
- 1.5 Multiplication with Whole Numbers, and Area 45
- 1.6 Division with Whole Numbers 61
- 1.7 Exponents and Order of Operations 71
- Summary, Reviews, and Test 81

## 2

### OPERATIONS WITH INTEGERS 87

- 2.1 Positive and Negative Numbers 88
- 2.2 Addition with Integers 97
- 2.3 Subtraction with Integers 106
- 2.4 Multiplication with Integers 114
- 2.5 Division with Integers 124
- Summary, Reviews, and Test 134

## 3

### SOLVING EQUATIONS 139

- 3.1 The Distributive Property and Algebraic Expressions 140
- 3.2 The Addition and Subtraction Properties of Equality 150
- 3.3 The Multiplication and Division Properties of Equality 158
- 3.4 Linear Equations in One Variable 166
- 3.5 Evaluating Formulas 174
- 3.6 Applications 185
- Summary, Reviews, and Test 196

## 4

### FRACTIONS 201

- 4.1 Introduction to Fractions 202
- 4.2 Prime Numbers, Factors, and Reducing to Lowest Terms 216
- 4.3 Multiplication with Fractions, and the Area of a Triangle 225
- 4.4 Division with Fractions 235
- 4.5 Addition and Subtraction with Fractions 242
- 4.6 Operations with Mixed Numbers 255
- 4.7 Order of Operations and Complex Fractions 266
- 4.8 Solving Equations Involving Fractions 274
- Summary, Reviews, and Test 282



## DECIMALS 289

- 5.1 Decimal Notation, Place Value, and Rounding 290
- 5.2 Addition and Subtraction with Decimals 300
- 5.3 Multiplication with Decimals 308
- 5.4 Division with Decimals 318
- 5.5 Fractions and Decimals 330
- 5.6 Equations with Decimals 339
- 5.7 Square Roots and the Pythagorean Theorem 347
- 5.8 Simplifying Square Roots 358
- 5.9 Adding and Subtracting Square Roots 364
- Summary, Reviews, and Test 371

## RATIO AND PROPORTION 377

- 6.1 Ratios 378
- 6.2 Rates and Unit Pricing 386
- 6.3 Proportions 392
- 6.4 Applications of Proportions 399
- 6.5 Similar Figures 405
- 6.6 Mean, Median, and Mode 413
- Summary, Reviews, and Test 421

## PERCENT 427

- 7.1 Percents, Decimals, and Fractions 428
- 7.2 Percent Problems 438
- 7.3 General Applications of Percent 447
- 7.4 Sales Tax and Commission 453
- 7.5 Percent Increase or Decrease, and Discount 460
- 7.6 Interest 467
- 7.7 Pie Charts 474
- Summary, Reviews, and Test 484

## MEASUREMENT 491

- 8.1 Perimeter and Area 492
- 8.2 Surface Area 503
- 8.3 Volume 510
- 8.4 Length 518
- 8.5 Weight and Capacity 529
- 8.6 Converting Between Two Systems, and Temperature 538
- 8.7 Operations with Time, and Mixed Units 546
- Summary, Reviews, and Test 555



5

6

7

8



# 9

## LINEAR EQUATIONS WITH APPLICATIONS 561

- 9.1 Algebraic Expressions 562
- 9.2 Linear Equations Revisited 572
- 9.3 A General Approach to Linear Equations 582
- 9.4 Formulas 593
- 9.5 Applications of Linear Equations 601
- 9.6 Linear Inequalities in One Variable 614
- Summary, Reviews, and Test 628

# 10

## EXPONENTS AND POLYNOMIALS 633

- 10.1 Multiplication with Exponents and Scientific Notation 634
- 10.2 Negative Exponents 645
- 10.3 Operations with Monomials 659
- 10.4 Addition and Subtraction of Polynomials 668
- 10.5 Multiplication of Polynomials 675
- 10.6 Special Products 684
- 10.7 Dividing Polynomials 692
- Summary, Reviews, and Test 701

# 11

## FACTORING POLYNOMIALS 707

- 11.1 The Greatest Common Factor and Factoring by Grouping 708
- 11.2 Factoring Trinomials of the Form  $x^2 + bx + c$  717
- 11.3 Factoring Trinomials of the Form  $ax^2 + bx + c$  726
- 11.4 The Difference of Two Squares and  
Perfect Square Trinomials 736
- 11.5 The Sum and Difference of Two Cubes 743
- 11.6 Factoring: A General Review 748
- 11.7 Solving Quadratic Equations by Factoring 755
- 11.8 Applications of Quadratic Equations 764
- Summary, Reviews, and Test 776

# 12

## RATIONAL EXPRESSIONS AND EQUATIONS 783

- 12.1 Simplifying Rational Expressions 784
- 12.2 Multiplication and Division of Rational Expressions 792
- 12.3 Addition and Subtraction of Rational Expressions 803
- 12.4 Equations Involving Rational Expressions 812
- 12.5 Applications of Rational Equations 820
- 12.6 Complex Fractions 829
- Summary, Reviews, and Test 838



## GRAPHING LINEAR EQUATIONS WITH APPLICATIONS 845

- 13.1 The Rectangular Coordinate System and Linear Equations 846
- 13.2 Graphing Linear Equations 859
- 13.3 Intercepts 871
- 13.4 Slope 884
- 13.5 Equations of Lines 900
- 13.6 Linear Inequalities in Two Variables 911
- 13.7 Displaying Information 921
- 13.8 Introduction to Functions 931
- 13.9 Variation 942
- Summary, Reviews, and Test 950

## SYSTEMS OF EQUATIONS 957

- 14.1 Solving Linear Systems by Graphing 958
- 14.2 The Substitution Method 969
- 14.3 The Elimination Method 978
- 14.4 Applications of Systems of Equations 988
- 14.5 Systems of Linear Inequalities 996
- Summary, Reviews, and Test 1005

## RADICAL EXPRESSIONS AND EQUATIONS 1011

- 15.1 Radical Expressions 1012
- 15.2 Simplifying Radicals 1018
- 15.3 Addition and Subtraction of Radicals 1027
- 15.4 Multiplication and Division of Radicals 1033
- 15.5 Radical Equations 1042
- 15.6 Complex Numbers 1051
- Summary, Reviews, and Test 1060

## QUADRATIC EQUATIONS AND FUNCTIONS 1065

- 16.1 Factoring and the Square Root Property 1066
- 16.2 Completing the Square 1076
- 16.3 The Quadratic Formula 1084
- 16.4 Graphing Quadratic Equations 1094
- Summary, Reviews, and Test 1107

Answers to Odd-Numbered Problems A-1

Index I-1

13

14

15

16