Contents

MATHEMATICS AS A LIVING EXPERIENCE 1.1 Numbers and Algebra 1.2 Integers 15 1.3 Adding and Subtracting Integers 23 1.4 Multiplying and Dividing Integers Prime Factorization and the Greatest Common Factor 1.5 39 1.6 Rational Numbers, Decimals, and Percents 49 Operations with Fractions (Optional) 1.7 1.8 Commutative and Associative Properties 77 Operations Involving 0 and 1 1.9 1.10 **Applications** 89 101 Vocabulary and Symbols Sample Test 103

CHAPTER ONE

EVALUATING AND SIMPLIFYING ALGEBRAIC EXPRESSIONS 105

2.1	Order of Operations and Grouping Symbols	106
2.2	Evaluating Algebraic Expressions; Applications	to Geometry

2.3 Positive Exponents

Using the Distributive Property 133 2.4

> Simplifying Algebraic Expressions 141 Vocabulary and Symbols

Sample Test 151

2.5

CHAPTER TWO

111

SOLVING EQUATIONS AND INEQUALITIES

Solving Using the Addition Principle and 3.1 Multiplication Principle

3.2 Combining the Principles to Solve Equations 173

Solving Equations Containing Parentheses 183

193 Solving Word Problems 3.4

Applied Problems 211 3.5

Formulas 223 3.6

CHAPTER THREE

X

CONTENTS

3.7 3.8	Solving Inequalities Using the Addition Principle Solving Inequalities Using the Multiplication Principle Vocabulary and Symbols Sample Test 237 Very addition Principle 237 Vocabulary and Symbols Sample Test 247 General Review Chapters 1–3 249
4.1 4.2 4.3 4.4 4.5 4.6	PONENTS AND POLYNOMIALS 255 Positive Integral Exponents 256 Polynomials 267 Addition of Polynomials 277 Subtraction of Polynomials 287 Multiplication of Polynomials 295 Division of Polynomials 309
CHAPTER FIVE FAC	Negative and Zero Exponents Vocabulary and Symbols Sample Test 317 Vocabulary and Symbols Sample Test 331
5.1 5.2 5.3 5.4 5.5 5.6 5.7 5.8	Factoring Polynomials 334 Difference of Squares and Perfect Square Trinomials 339 Factoring Trinomials of the Type $x^2 + bx + c$ 349 Factoring Trinomials of the Type $ax^2 + bx + c$ 357 A Strategy for Factoring Completely 365 Solving Equations by Factoring 375 Applications 387 Factoring the Sum and Difference of Two Cubes (Optional) 399 Vocabulary and Symbols 405 Sample Test 407
CHAPTER SIX FR. 6.1	ACTIONAL EXPRESSIONS 409 Algebraic Fractions 410
6.1 6.2 6.3 6.4 6.5 6.6 6.7 6.8	Multiplication 423 Division 429 Sum and Difference of Like Fractions 437 Greatest Common Factors and Least Common Multiples 443 Sum and Difference of Unlike Fractions 449 Complex Fractions 459 Fractional Equations 473

CONTENTS

6.9	Literal Equations 483 Vocabulary and Symbols 491 Sample Test 493	
	General Review Chapters 4-6 495	
GRA	APHING 501	CHAPTER SEVEN
7.1	Cartesian Coordinate System 502	
7.2 7.3	Graphing Straight Lines 513 Slope 527	
7.4	•	
7.5	Equations of Straight Lines 535 Graphing Inequalities in Two Variables 545	
1.5	Vocabulary and Symbols 557 Sample Test 559	
SYST	TEMS OF EQUATIONS 561	CHAPTER EIGHT
8.1	Systems of Linear Equations 562	
8.2	Solution by Substitution 573	
8.3	Solution by Elimination 581	
8.4	Solving Problems 587	
8.5	Further Applications 599 Vocabulary and Symbols 607 Sample Test 609	e e e e e e e e e e e e e e e e e e e
RAD	DICALS 611	CHAPTER NINE
9.1	Square Roots 612	
9.2	Multiplication 619	
9.3	Division 629	
9.4	Addition and Subtraction 639	
9.5	Pythagorean Theorem 643	
9.6	Radical Equations 655 Vocabulary and Symbols 663 Sample Test 665	
	General Review Chapters 7-9 667	
QUA	DRATIC EQUATIONS 673	CHAPTER TEN
10.1	General Form of a Quadratic Equation 674	
10.1	Solving Quadratic Equations by Factoring 681	
10.2	Completing the Square 691	
10.3	Quadratic Formula 699	

xii

10.5 Applied Problems 709
Vocabulary and Symbols 717
Sample Test 719

APPENDICES

A. Sets **721**

B. Ratio, Proportion, Variation **731**

Answers to Selected Exercises and Sample Tests 743

Answers to the General Reviews 757

Index 759