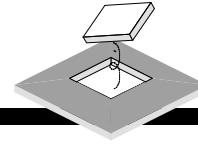


Table of Contents



Preface 1

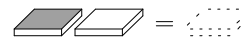
Chapter 1: Introduction



3

1. Learning By Discovery 4

Chapter 2: Positive and Negative Numbers



11

1. Positive and Negative Numbers 12

2. Addition of Signed Numbers 17

3. Subtraction of Signed Numbers 21

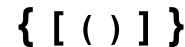
4. Addition and Subtraction 30

5. Multiplication 33

6. Division 38

7. The Number Line 43

Chapter 3: Symbols and the Order of Operations



47

1. Rules of Language 48

2. Order of Operations 53

3. Parentheses 56

4. Division and Fractions 61

5. Absolute Value 67

Chapter 4: Multiplication and Division of Fractions



71

1. Multiplication of Fractions 72

2. Division of Fractions 77

3. Compound Fractions 85

Chapter 5: Properties



89

1. Properties of Addition and Multiplication 90

2. The Distributive Property 96

3. Identities and Inverses 104

4. Properties of Zero 109

5. Properties or Rules? (Optional) 111

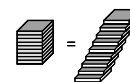
Chapter 6: Expressions



115

1. Simple Expressions	116
2. Multiples of x	120
3. Combining Similar Terms	124
4. Expressions and Parentheses	128
5. Expressions Containing Fractions	132
6. Properties of Expressions	135

Chapter 7: Equations



141

1. Introduction to Equations	142
2. The Equation Game	144
3. Equations using Unknowns	147
4. Equations with Multiples of Unknowns	152
5. Unknowns in More than One Term	156
6. Equations with Parentheses	162
7. Equations with Fractions or Decimals	165
8. Special Solutions	172

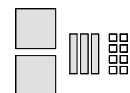
Chapter 8: Powers and Roots



175

1. Introduction to Exponents	176
2. Squares	179
3. Cubes	182
4. Higher Powers	185
5. Other Exponents: Negative Numbers, Zero, and One	188
6. Properties of Powers	193
7. Simplifying Expressions	202
8. Roots and Radicals	209
9. Irrational Numbers	214
10. Properties of Roots	218

Chapter 9: Polynomials



221

1. Using Unknowns $1, x, x^2$	222
2. Adding and Subtracting Polynomials	230
3. Multiplying Polynomials	234
4. Special Products	243

Chapter 10: Factoring Polynomials



253

1. Introduction to Rectangles and Factoring	254
2. Positive Units, Negative Bars	261
3. Rectangles Having Negative Units	265
4. Factoring Trinomials with More than One x^2	272
5. Using the Grid	276
6. A Shortcut Method	280
7. Recognizing Special Products	289
8. Expressions Which Cannot be Factored	297

Chapter 11: Quadratic Equations



301

1. Introduction	302
2. The Zero Product Rule	305
3. Standard Form	312
4. Factoring Quadratic Equations	317
5. Completing the Square	325
6. Equations with More than One x^2	336
7. Imaginary Solutions	343
8. The Quadratic Formula	350

Chapter 12: Rules and Graphs



355

1. Related Numbers	356
2. Machines, Charts, and a Second Variable	363
3. Graphs and Coordinates	369
4. Graphs of Lines	377
5. Slopes and Intercepts	387
6. Graphing with Slopes and Intercepts	397
7. Graphing with Two Intercepts	404
8. Summary	409

Chapter 13: Systems of Equations



411

1. Equations and Solutions	412
2. Solving by Graphing	419
3. The Substitution Method	425
4. The Addition Method	439
5. Choosing a Method	448
6. Special Cases	452

Chapter 14: Rational Expressions $\frac{x}{x+3}$ **457**

1. Introduction	458
2. Simplifying Rational Expressions	463
3. Division Using Chips	473
4. Long Division	484
5. Multiplication	492
6. Division	499
7. Addition	501
8. Summary	509

Appendices**+****511**

Appendix 1: Division of Fractions, Part 2	512
Appendix 2: Mixed Numbers	516
Appendix 3: The Function Game	520
Appendix 4: Functions and Maps	529
Appendix 5: Factoring By Grouping	534

Answers to Exercises**?****A-1**

Chapter 1: Introduction	A-2
Chapter 2: Positive and Negative Numbers	A-3
Chapter 3: Symbols and the Order of Operations	A-5
Chapter 4: Multiplication and Division of Fractions	A-7
Chapter 5: Properties	A-8
Chapter 6: Expressions	A-9
Chapter 7: Equations	A-11
Chapter 8: Powers and Roots	A-13
Chapter 9: Polynomials	A-16
Chapter 10: Factoring Polynomials	A-18
Chapter 11: Quadratic Equations	A-20
Chapter 12: Rules and Graphs	A-22
Chapter 13: Systems of Equations	A-27
Chapter 14: Rational Expressions	A-29
Appendices	A-31