Dedication
This book is dedicated to Edward Keenan who left a profound influence on mathematics education in New York State and on the development of Amsco texts.

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This author has been associated with mathematics education in New York State as a teacher and an author throughout the many changes of the past fifty years. She has worked as a consultant to the Mathematics Bureau of the Department of Education in the development and writing of Sequential Mathematics and has been a coauthor of Amsco’s Integrated Mathematics series, which accompanied that course of study.

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Integrated Algebra 1 is a new text for high school algebra that continues the approach that has made Amsco a leader in presenting mathematical ideas in a contemporary, integrated manner. Over the past decades, this approach has undergone numerous changes and refinements to keep pace with ever changing technology.

This Amsco book uses an integrated approach to the teaching of high school mathematics that is promoted by the National Council of Teachers of Mathematics in its Principles and Standards for School Mathematics and mandated by the New York State Board of Regents in the New York State Mathematics Core Curriculum. This text presents a range of materials and explanations that are guidelines for achieving a high level of excellence in the study of mathematics.

In this book:

✔ The graphing calculator is introduced and used throughout the book as a routine tool in the study of mathematics. Underlying mathematical concepts and procedures are clearly presented, stressing calculator use as a learning and computational aid.

✔ The real number system is fully developed, to help students understand and correctly interpret technological limitations such as the calculator displays of rational approximations. The role of precision and accuracy, in determining acceptable computational results, is carefully explained and illustrated.

✔ Application of algebra to the solution of problems from geometry, probability, statistics, finance, and other real-world applications is developed throughout the text.

✔ Enrichment is stressed throughout the text and in the Teacher’s Manual where multiple suggestions are given for teaching strategies, for further explorations of related topics, and for alternative assessment. The text, as well as the Manual, includes opportunities for cooperative learning, hands-on activities, extended tasks, and independent investigation. Reproducible Enrichment Activities for each chapter provide both material for review and reinforcement as well as for in-depth study.
Exercises are divided into three categories. Writing About Mathematics provides questions in which students are asked to contrast, compare, evaluate, and justify their own ideas or those of others. These questions help students incorporate the tools of the performance indicators—investigate, explore, discover, conjecture, reason, justify, explain, prove, and apply—into their study of mathematics. These questions also provide a valuable source of material for classroom discussion or for inclusion in a student portfolio. Developing Skills provides routine practice exercises that enable the student and the teacher to evaluate the student’s ability to both manipulate mathematical symbols and understand mathematical relationships. Applying Skills provides exercises in which the new ideas of each section, together with previously learned skills, are used to solve problems that reflect real-life situations.

Conceptual understanding, procedural fluency, and problem solving, which are the primary goals of the Core Curriculum are addressed throughout the text. General concepts and principles are fully addressed and developed in detail, then further explored in the examples and exercise sections. The Procedures throughout the text explain how to perform both arithmetic and geometric processes. The Examples given in each section demonstrate problem solving approaches, often presenting alternative strategies for solution. Both routine and non-routine problems are presented.

The material in this text is intended to present basic algebra and its relationship to other branches of mathematics. The text aims at developing mathematics as a unified whole in which each branch of mathematics is integrally related. Many of the concepts presented in this text have been introduced in previous mathematics courses. The text provides the opportunity for students to review familiar material that is the foundation for the development of new topics, and presents all the material needed to develop the skills and achieve the goals suggested in the New York State Core Curriculum for Integrated Algebra.

An intent of the author was to make this text of greatest service to the average student. However, the materials for reinforcement and for enrichment that the text contains make it appropriate for varying abilities. Specifically:

Concepts are carefully developed using appropriate language and mathematical symbolism.

General principles and procedures are stated clearly and concisely.

Numerous solved examples serve as models for students, with detailed step-by-step explanations.

Abundant and varied exercises develop skills and test understanding. Additional enrichment activities challenge the most capable student.

This text is offered so that teachers may effectively continue to help students to comprehend, master, and enjoy mathematics.
# CONTENTS

## Chapter 1

**NUMBER SYSTEMS**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td>The Integers</td>
<td>2</td>
</tr>
<tr>
<td>1-2</td>
<td>The Rational Numbers</td>
<td>11</td>
</tr>
<tr>
<td>1-3</td>
<td>The Irrational Numbers</td>
<td>17</td>
</tr>
<tr>
<td>1-4</td>
<td>The Real Numbers</td>
<td>25</td>
</tr>
<tr>
<td>1-5</td>
<td>Numbers as Measurements</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Chapter Summary</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Vocabulary</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Review Exercises</td>
<td>35</td>
</tr>
</tbody>
</table>

## Chapter 2

**OPERATIONS AND PROPERTIES**

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>Order of Operations</td>
<td>38</td>
</tr>
<tr>
<td>2-2</td>
<td>Properties of Operations</td>
<td>45</td>
</tr>
<tr>
<td>2-3</td>
<td>Addition of Signed Numbers</td>
<td>54</td>
</tr>
<tr>
<td>2-4</td>
<td>Subtraction of Signed Numbers</td>
<td>59</td>
</tr>
<tr>
<td>2-5</td>
<td>Multiplication of Signed Numbers</td>
<td>64</td>
</tr>
<tr>
<td>2-6</td>
<td>Division of Signed Numbers</td>
<td>68</td>
</tr>
<tr>
<td>2-7</td>
<td>Operations with Sets</td>
<td>71</td>
</tr>
<tr>
<td>2-8</td>
<td>Graphing Number Pairs</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>Chapter Summary</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Vocabulary</td>
<td>82</td>
</tr>
<tr>
<td></td>
<td>Review Exercises</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>Cumulative Review</td>
<td>85</td>
</tr>
</tbody>
</table>
### Chapter 3
#### ALGEBRAIC EXPRESSIONS AND OPEN SENTENCES

- **3-1 Using Letters to Represent Numbers**
- **3-2 Translating Verbal Phrases Into Symbols**
- **3-3 Algebraic Terms and Vocabulary**
- **3-4 Writing Algebraic Expressions in Words**
- **3-5 Evaluating Algebraic Expressions**
- **3-6 Open Sentences and Solution Sets**
- **3-7 Writing Formulas**

### Chapter Summary

- **Vocabulary**
- **Review Exercises**
- **Cumulative Review**

### Chapter 4
#### FIRST DEGREE EQUATIONS AND INEQUALITIES IN ONE VARIABLE

- **4-1 Solving Equations Using More Than One Operation**
- **4-2 Simplifying Each Side of an Equation**
- **4-3 Solving Equations That Have the Variable in Both Sides**
- **4-4 Using Formulas to Solve Problems**
- **4-5 Solving for a Variable in Terms of Another Variable**
- **4-6 Transforming Formulas**
- **4-7 Properties of Inequalities**
- **4-8 Finding and Graphing the Solution Set of an Inequality**
- **4-9 Using Inequalities to Solve Problems**

### Chapter Summary

- **Vocabulary**
- **Review Exercises**
- **Cumulative Review**

### Chapter 5
#### OPERATIONS WITH ALGEBRAIC EXPRESSIONS

- **5-1 Adding and Subtracting Algebraic Expressions**
- **5-2 Multiplying Powers That Have the Same Base**
- **5-3 Multiplying by a Monomial**
- **5-4 Multiplying Polynomials**
- **5-5 Dividing Powers That Have the Same Base**
- **5-6 Powers with Zero and Negative Exponents**
- **5-7 Scientific Notation**
- **5-8 Dividing by a Monomial**

### Chapter Summary

- **Vocabulary**
- **Review Exercises**
- **Cumulative Review**
Chapter 6
RATIO AND PROPORTION

6-1 Ratio
6-2 Using a Ratio to Express a Rate
6-3 Verbal Problems Involving Ratio
6-4 Proportion
6-5 Direct Variation
6-6 Percent and Percentage Problems
6-7 Changing Units of Measure

Chapter Summary
Vocabulary
Review Exercises
Cumulative Review

Chapter 7
GEOMETRIC FIGURES, AREAS, AND VOLUMES

7-1 Points, Lines, and Planes
7-2 Pairs of Angles
7-3 Angles and Parallel Lines
7-4 Triangles
7-5 Quadrilaterals
7-6 Areas of Irregular Polygons
7-7 Surface Areas of Solids
7-8 Volumes of Solids

Chapter Summary
Vocabulary
Review Exercises
Cumulative Review

Chapter 8
TRIGONOMETRY OF THE RIGHT TRIANGLE

8-1 The Pythagorean Theorem
8-2 The Tangent Ratio
8-3 Applications of the Tangent Ratio
<table>
<thead>
<tr>
<th>Chapter 9</th>
<th>GRAPHING LINEAR FUNCTIONS AND RELATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-1</td>
<td>Sets, Relations, and Functions</td>
</tr>
<tr>
<td>9-2</td>
<td>Graphing Linear Functions Using Their Solutions</td>
</tr>
<tr>
<td>9-3</td>
<td>Graphing a Line Parallel to an Axis</td>
</tr>
<tr>
<td>9-4</td>
<td>The Slope of a Line</td>
</tr>
<tr>
<td>9-5</td>
<td>The Slopes of Parallel and Perpendicular Lines</td>
</tr>
<tr>
<td>9-6</td>
<td>The Intercepts of a Line</td>
</tr>
<tr>
<td>9-7</td>
<td>Graphing Linear Functions Using Their Slopes</td>
</tr>
<tr>
<td>9-8</td>
<td>Graphing Direct Variation</td>
</tr>
<tr>
<td>9-9</td>
<td>Graphing First-Degree Inequalities in Two Variables</td>
</tr>
<tr>
<td>9-10</td>
<td>Graphs Involving Absolute Value</td>
</tr>
<tr>
<td>9-11</td>
<td>Graphs Involving Exponential Functions</td>
</tr>
<tr>
<td></td>
<td>Chapter Summary</td>
</tr>
<tr>
<td></td>
<td>Vocabulary</td>
</tr>
<tr>
<td></td>
<td>Review Exercises</td>
</tr>
<tr>
<td></td>
<td>Cumulative Review</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 10</th>
<th>WRITING AND SOLVING SYSTEMS OF LINEAR FUNCTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-1</td>
<td>Writing An Equation Given Slope and One Point</td>
</tr>
<tr>
<td>10-2</td>
<td>Writing an Equation Given Two Points</td>
</tr>
<tr>
<td>10-3</td>
<td>Writing an Equation Given the Intercepts</td>
</tr>
<tr>
<td>10-4</td>
<td>Using a Graph to Solve a System of Linear Equations</td>
</tr>
<tr>
<td>10-5</td>
<td>Using Addition to Solve a System of Linear Equations</td>
</tr>
<tr>
<td>10-6</td>
<td>Using Substitution to Solve a System of Linear Equations</td>
</tr>
<tr>
<td>10-7</td>
<td>Using Systems of Equations to Solve Verbal Problems</td>
</tr>
<tr>
<td>10-8</td>
<td>Graphing the Solution Set of a System of Inequalities</td>
</tr>
<tr>
<td></td>
<td>Chapter Summary</td>
</tr>
<tr>
<td></td>
<td>Vocabulary</td>
</tr>
<tr>
<td></td>
<td>Review Exercises</td>
</tr>
<tr>
<td></td>
<td>Cumulative Review</td>
</tr>
</tbody>
</table>
## Chapter 11

### SPECIAL PRODUCTS AND FACTORS

11-1 Factors and Factoring 443
11-2 Common Monomial Factors 447
11-3 The Square of a Monomial 449
11-4 Multiplying the Sum and the Difference of Two Terms 450
11-5 Factoring the Difference of Two Perfect Squares 452
11-6 Multiplying Binomials 454
11-7 Factoring Trinomials 457
11-8 Factoring a Polynomial Completely 461

Chapter Summary 464
Vocabulary 464
Review Exercises 465
Cumulative Review 466

## Chapter 12

### OPERATIONS WITH RADICALS

12-1 Radicals and the Rational Numbers 470
12-2 Radicals and the Irrational Numbers 476
12-3 Finding the Principal Square Root of a Monomial 482
12-4 Simplifying a Square-Root Radical 484
12-5 Addition and Subtraction of Radicals 487
12-6 Multiplication of Square-Root Radicals 491
12-7 Division of Square-Root Radicals 494

Chapter Summary 496
Vocabulary 497
Review Exercises 497
Cumulative Review 499

## Chapter 13

### QUADRATIC RELATIONS AND FUNCTIONS

13-1 Solving Quadratic Equations 503
13-2 The Graph of a Quadratic Function 508
13-3 Finding Roots from a Graph 522
13-4 Graphic Solution of a Quadratic-Linear System 525
13-5 Algebraic Solution of a Quadratic-Linear System 529

Chapter Summary 533
Vocabulary 534
Review Exercises 534
Cumulative Review 536
## Chapter 14
### ALGEBRAIC FRACTIONS, AND EQUATIONS AND INEQUALITIES INVOLVING FRACTIONS 539

14-1 The Meaning of an Algebraic Fraction 540
14-2 Reducing Fractions to Lowest Terms 541
14-3 Multiplying Fractions 545
14-4 Dividing Fractions 548
14-5 Adding or Subtracting Algebraic Fractions 550
14-6 Solving Equations with Fractional Coefficients 556
14-7 Solving Inequalities with Fractional Coefficients 562
14-8 Solving Fractional Equations 565

Chapter Summary 569
Vocabulary 570
Review Exercises 570
Cumulative Review 573

## Chapter 15
### PROBABILITY 575

15-1 Empirical Probability 576
15-2 Theoretical Probability 584
15-3 Evaluating Simple Probabilities 590
15-4 The Probability of (A and B) 596
15-5 The Probability of (A or B) 599
15-6 The Probability of (Not A) 605
15-7 The Counting Principle, Sample Spaces, and Probability 609
15-8 Probabilities with Two or More Activities 617
15-9 Permutations 627
15-10 Permutations with Repetition 636
15-11 Combinations 639
15-12 Permutations, Combinations, and Probability 646

Chapter Summary 651
Vocabulary 653
Review Exercises 653
Cumulative Review 657

## Chapter 16
### STATISTICS 660

16-1 Collecting Data 661
16-2 Organizing Data 667
16-3 The Histogram 675
16-4 The Mean, the Median, and the Mode 680
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-5</td>
<td>Measures of Central Tendency and Grouped Data</td>
<td>690</td>
</tr>
<tr>
<td>16-6</td>
<td>Quartiles, Percentiles, and Cumulative Frequency</td>
<td>698</td>
</tr>
<tr>
<td>16-7</td>
<td>Bivariate Statistics</td>
<td>710</td>
</tr>
<tr>
<td></td>
<td>Chapter Summary</td>
<td>724</td>
</tr>
<tr>
<td></td>
<td>Vocabulary</td>
<td>725</td>
</tr>
<tr>
<td></td>
<td>Review Exercises</td>
<td>725</td>
</tr>
<tr>
<td></td>
<td>Cumulative Review</td>
<td>729</td>
</tr>
</tbody>
</table>

**INDEX**

731