



The Algebra I Interactive Series is designed to incorporate all modalities of learning into one easy to use learning tool; thereby reinforcing learning by immersing students in a topic. These self-paced tutorials contain assessments, video instruction, interactive follow up problems with hints and tips, post-tests, study guides for pencil and paper note taking and additional practice problems. This series also features useful teacher feedback reports that track students' progress.

### Chapters Covered:

- **Introduction to Real Numbers and Variables**  
This chapter covers variables and algebraic expressions, order of operations, sets of real numbers, comparing real numbers and exponents.
- **Operations With Real Numbers**  
This chapter covers adding real numbers on the number line, adding, subtracting, multiplying, and dividing real numbers, and properties of real numbers.
- **Algebraic Expressions**  
This chapter covers evaluating algebraic expressions, combining like terms, and simplifying algebraic expressions

### Recommended Order of Study:

- Print the Study Guide pages.
- Work the Pre-assessment test prior to beginning each lesson to determine skill level and understanding of the topics covered.
- Begin the Video Lesson as prompted based on the pre-assessment results.
- Work through the video lesson. Use the study guide as a means to take notes, follow along with worked examples, and work additional practice problems.
- Work the Practice Problems for each objective.
- Take the Post-Test
- Review Scores

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## A1.1 Variables and Algebraic Expressions

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### Objectives

1. Write word phrases as algebraic expressions
2. Find values of algebraic expressions given values of the variables

### Key Terms:

Algebraic Expressions  
Variable

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## A1.2 Order of Operations

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### Objectives

1. Define and use order of operations to evaluate an expression
2. Use substitution to evaluate an expression

### Key Terms:

Order of Operations  
Exponential Expressions

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## A1.3 Set of Real Numbers

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### Objectives

1. Identify common sets of numbers
2. Construct a number line

### Key Terms:

Number Line  
Rational Numbers  
Irrational Numbers  
Real Numbers  
Natural Numbers  
Whole Numbers  
Integers

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## A1.4 Comparing Real Numbers

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### Objectives

1. Define the meaning of  $<$ ,  $>$ , and  $=$
2. Compare and order real numbers

### Key Terms:

Equal To  
Less Than  
Greater Than

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## A1.5 Exponents

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### Objectives

1. Evaluate exponential expressions

### Key Terms:

Exponent

**CD 1, Chapter 2: Operations with Real Numbers**

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**A2.1 Adding Real Numbers on the Number line**

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**Objectives**

1. Add real numbers on a number line

**Key Terms:**

Real Numbers  
Number Line

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**A2.2 Adding Real Numbers**

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**Objectives**

1. Find the *absolute value* of a real number
2. Add real numbers

**Key Terms:**

Absolute Value

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**A2.3 Subtracting Real Numbers**

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**Objectives**

1. Find the opposite of a real number
2. Subtract real numbers

**Key Terms:**

Opposites

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**A2.4 Multiplying Real Numbers**

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**Objectives**

1. Multiply real numbers

**Key Terms:**

Multiplication by Zero

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**A2.5 Dividing Real Numbers**

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**Objectives**

1. Divide real numbers

**Key Terms:**

Reciprocals  
Multiplicative Inverse Property

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**A2.6 Properties of Real Numbers**

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**Objectives**

1. Understand and use the properties of real numbers

**Key Terms:**

Commutative Properties  
Associative Properties  
Distributive Property

**CD 1, Chapter 3: Algebraic Expressions**

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A3.1 Evaluating Algebraic Expressions

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**Objectives**

1. Use order of operations to evaluate expressions
2. Find values of algebraic expressions given replacement values.

**Key Terms:**

Replacement Value

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A3.2 Combining Like Terms

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**Objectives**

1. Combine like Terms

**Key Terms:**

Term  
Like Terms  
Numerical Coefficient

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A3.3 Simplifying Algebraic Expressions

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**Objectives**

1. Simplify algebraic expressions by combining like terms

**Key Terms:**

Distributive Property  
Like Terms



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### Chapters Covered:

- **Solving Equations**  
This chapter covers solutions sets, solving equations using addition and subtraction properties, solving equations using multiplication and division properties, solving equations requiring more than one step, solving equations with variables on both sides, solving percent equations, solving literal equations, and solving absolute value equations.
- **Problem Solving**  
This chapter contains problem solving using: formulas to solve applications; from words to symbols; geometry; percent; mixtures; and distance/rate/time.

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### A4.1 Solution Sets

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#### Objectives

1. Find the solution set of an open sentence from a given replacement set

#### Key Terms:

Solution  
Solution Set  
Equation  
Inequality

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### A4.2 Solving Equations Using Addition and Subtraction Properties

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#### Objectives

1. Use the addition and subtraction properties for equations to solve equations

#### Key Terms:

Addition Property  
Subtraction Property  
Equivalent Equations

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### A4.3 Solving Equations Using Multiplication and Division Properties

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#### Objectives

1. Solve equations using multiplication and division properties for equations

#### Key Terms:

Multiplication Property for Equations  
Division Property for Equations

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### A4.4 Solving Equations Requiring More Than One Property

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#### Objectives

1. Solve equations using more than one property

#### Key Terms:

Properties of Equations  
Variable

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### A4.5 Solving Equations with Variables on Both Sides

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#### Objectives

1. Solving equations containing variables on both sides of the equal sign

#### Key Terms:

Solutions to Equations

**CD 2, Chapter 4: Solving Equations**

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A4.6 Solving Percent Equations

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**Objectives**

1. Use equations to solve percent problems

**Key Terms:**

Percent

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A4.7 Solving Literal Equations

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**Objectives**

1. Solve literal equations for a specified variable

**Key Terms:**

Literal Equation

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A4.8 Solving absolute Value Equations

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**Objectives**

1. Solve equations containing the absolute value of a variable expression

**Key Terms:**

Absolute Value

**CD 2, Chapter 5: Problem Solving**

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**A5.1 Problem Solving: Using Formulas to Solve Applications**

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**Objectives**

1. Use formulas to solve word problems and solve an equation for a specified variable

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**A5.2 Problem Solving: From Words to Symbols**

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**Objectives**

1. Write equations to solve problems

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**A5.3 Problem Solving: Geometry**

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**Objectives**

1. Solve problems using geometric formulas

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**A5.4 Problem Solving: Percent Applications**

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**Objectives**

1. Solve problems involving percent (percent increase, or percent decrease)

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**A5.5 Problem Solving: Mixtures**

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**Objectives**

1. Solve problems involving mixtures

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**A5.6 Solving: Distance/Rate/Time**

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**Objectives**

1. Use the formula  $d = r \cdot t$  to solve problems

**Key Terms:**

Word Problems  
Real Life Examples

**Key Terms:**

Direct Translation Application

**Key Terms:**

Complementary Angles

**Key Terms:**

Percent Increase  
Percent Decrease

**Key Terms:**

Word Problems  
Real Life Examples

**Key Terms:**

Distance  
Rate  
Time

**CD 3 – Inequalities and Exponents**

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**Chapters Covered:**

- **Solving Inequalities**  
This chapter contains graphing inequalities, solving inequalities using addition and subtraction properties, solving inequalities using multiplications and division properties, solving inequalities requiring more than one step, solving combined inequalities, and solving absolute value inequalities
- **Exponents**  
This chapter covers multiplying monomials, powers of monomials, dividing monomials, negative exponents, and scientific notation

**Recommended Order of Study:**

- Print the Study Guide pages.
- Work the Pre-assessment test prior to beginning each lesson to determine skill level and understanding of the topics covered.
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- Take the Post-Test
- Review scores

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### A6.1 Graphing Inequalities

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#### Objectives

1. Graph inequalities on a number line

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### A6.2 Solving Inequalities Using Addition and Subtraction Properties

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#### Objectives

1. Solve Inequalities using addition and subtraction properties for inequalities

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### A6.3 Solving Inequalities Using Multiplication and Division Properties

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#### Objectives

1. Solve inequalities using multiplication and division properties for inequalities

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### A6.4 Solving Inequalities Requiring More Than One Step

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#### Objectives

1. Solve inequalities using more than one property

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### A6.5 Solving Combined Inequalities

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#### Objectives

1. Solve combined inequalities and graph their solution sets

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### A6.6 Solving Absolute Value Inequalities

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#### Objectives

1. Solve inequalities containing the absolute value of a variable expression

#### Key Terms:

Solution Set  
Number Line

#### Key Terms:

Addition and Subtraction  
Properties of Inequalities

#### Key Terms:

Multiplication and Division  
Properties of Inequalities

#### Key Terms:

Multiplication Properties of  
Inequalities  
Division Properties of  
Inequalities

#### Key Terms:

Disjunction  
Conjunction

#### Key Terms:

Absolute Value Equations  
Conjunction

**CD 3, Chapter 7: Exponents**

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**A7.1 Multiplying Monomials**

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**Objectives**

1. Define an exponent
2. Product rule for exponents
3. Identify and multiply monomials

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**A7.2 Powers of Monomials**

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**Objectives**

1. Raise a monomial to a power

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**A7.3 Dividing Monomials**

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**Objectives**

1. Divide monomials

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**A7.4 Negative Exponents**

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**Objectives**

1. Simplify exponential expressions containing negative exponents

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**A7.5 Scientific Notation**

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**Objectives**

1. Write numbers in Scientific Notation
2. Convert and find product or quotient in Scientific Notation

**Key Terms:**

Product Rule for Exponents  
Monomial

**Key Terms:**

Power of a Power Rule  
Power of a Product Rule

**Key Terms:**

Quotient Rule  
Zero Power Rule

**Key Terms:**

Negative Exponent Rule

**Key Terms:**

Scientific Notation



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### Chapters Covered:

- Operations with Polynomials  
This chapter covers polynomials, adding and subtracting polynomials, multiplying polynomials, multiplying binomials, special products, and dividing polynomials
- Factoring Polynomials  
This chapter covers factoring integers, greatest common factor, factoring by grouping, factoring the difference of two squares, factoring  $x^2+bx+c$ , factoring  $ax^2+bx+c$ , factoring completely, and solving equations by factoring

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**CD 4, Chapter 8: Operations with Polynomials****A8.1 Polynomials****Objectives**

1. Identify the degree of a polynomial
2. Review combining like terms

**A8.2 Adding and Subtracting Polynomials****Objectives**

1. Add polynomials
2. Subtract polynomials

**A8.3 Multiplying Polynomials****Objectives**

1. Review multiplying monomials and multiply polynomials

**A8.4 Multiplying Binomials****Objectives**

1. Use the FOIL order of multiplication to multiply binomials

**A8.5 Special Products****Objectives**

1. Square binomials
2. Find product of the sum and difference of the same two terms

**A8.6 Dividing Polynomials****Objectives**

1. Divide Polynomials

**Key Terms:**

Monomial  
Binomials  
Trinomials  
Polynomial  
Degree  
Like Terms

**Key Terms:**

Addition of Polynomials  
Subtraction of Polynomials

**Key Terms:**

Rules for Exponents  
Distributive Property  
Area

**Key Terms:**

F First  
O Outer  
I Inner  
L Last

**Key Terms:**

Binomial Squared  
Patterns Discovered

**Key Terms:**

Divisor  
Dividend  
Quotient

**CD 4, Chapter 9: Factoring Polynomials****A9.1 Factoring Integers****Objectives**

1. Write a number as a product of prime number
2. Find the *Greatest Common Factor* of a list of integers

**Key Terms:**

Prime Numbers  
Composite Numbers  
Greatest Common Factor (GCF)

**A9.2 The Greatest Common Factor****Objectives**

1. Find the GCF of a list of monomials
2. Factor the GCF from a polynomial

**Key Terms:**

Polynomial  
GCF  
Monomial

**A9.3 Factoring by Grouping****Objectives**

1. Factor polynomials by factoring out common binomials
2. Factor polynomials by grouping the terms

**Key Terms:**

Polynomial  
GCF

**A9.4 Factoring the Difference of Two Squares****Objectives**

1. Factor the difference of two squares

**Key Terms:**

Factor  
Square

**A9.5 Factoring  $x^2+bx+c$** **Objectives**

1. Factor a trinomial of the form  $x^2 + bx + c$

**Key Terms:**

Trinomial

**CD 4, Chapter 9: Factoring Polynomials**

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**A9.6 Factoring  $ax^2+bx+c$** 

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**Objectives**

1. Factor a trinomial of the form

$$ax^2 + bx + c$$

**Key Terms:**

Trinomial

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**A9.7 Factoring Completely**

---

**Objectives**

1. Factor a polynomial completely

**Key Terms:**

GCF

Polynomial

Factor

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**A9.8 Solving Equations by Factoring**

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**Objectives**

1. Solve equation by factoring

**Key Terms:**

Zero Factor Theorem

**Chapters Covered:**

- **Rational Expressions**

This chapter covers simplifying rational expressions, multiplying and dividing rational expressions, least common denominator, adding and subtracting rational expressions with like denominators, adding and subtracting rational expressions with unlike denominators, operations on rational expressions, complex fractions, and solving equations with rational expressions.

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**CD 5, Chapter 10: Rational Expressions**

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**A10.1 Simplifying Rational Expressions**

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**Objectives**

1. Define rational expressions and identify values for which a rational expression is undefined
2. Write a rational expression in lowest terms

**Key Terms:**

Rational Expressions  
Simplest Form

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**A10.2 Multiplying Rational Expressions**

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**Objectives**

1. Multiply rational expressions

**Key Terms:**

Multiplying Rational Expressions

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**A10.3 Dividing Rational Expressions**

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**Objectives**

1. Divide rational expressions

**Key Terms:**

Dividing Rational Expressions

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**A10.4 Least Common Denominators**

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**Objectives**

1. Find the least common denominator of a list of rational expressions
2. Write a rational expression as an equivalent rational expression whose denominator is given

**Key Terms:**

Least Common Denominator (LCD)

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**A10.5 Add and Subtract Rational Expressions with like Denominators**

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**Objectives**

1. Add and subtract rational expressions with the same denominators

**Key Terms:**

Algebraic Expressions  
Rational Expressions  
Common Denominator

**CD 5, Chapter 10: Rational Expressions**

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A10.6 Add and Subtract Rational Expressions With Unlike Denominators

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**Objectives**

1. Add and subtract rational expressions with different denominators

**Key Terms:**

Rational Expressions  
Unlike Denominators  
LCD

---

A10.7 Operations on Rational Expressions

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**Objectives**

1. Add, subtract, multiply, and divide rational expressions

**Key Terms:**

Rational Expressions  
Numerator  
Denominator  
LCD

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A10.8 Complex Fractions

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**Objectives**

1. Define and simplify complex fractions

**Key Terms:**

Complex Fractions

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A10.9 Solving Equations with Rational Expressions

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**Objectives**

1. Solve equations containing rational expressions

**Key Terms:**

Equation  
Rational Expression



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### Chapters Covered:

- **Graphing Linear Equations and Inequalities**  
This chapter covers graphing ordered pairs, graphing linear equations in two variables, x- and y- intercepts, relations, functions, and graphing linear inequalities in two variables
- **Slope and Forms of Equations of Lines**  
This chapter covers slope, slope-intercept form of a linear equation, point-slope form of a linear equation, and using two points to write equations of lines
- **Systems of Linear Equations**  
This chapter covers graphing systems of linear equations, the substitution method, the addition method, and using multiplication with the addition method

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**CD 6, Chapter 11: Graphing Linear Equations and Inequalities**

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**A11.1 Graphing Ordered Pairs**

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**Objectives**

1. Graphing ordered pairs
2. Identify solutions of linear equations in two variables

**Key Terms:**

Ordered Pairs

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**A11.2 Graphing Linear Equations in Two Variables**

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**Objectives**

1. Graph a linear equation in two variables

**Key Terms:**

Linear Equations in Two Variables

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**A11.3 Graphing Using x- and y-Intercepts**

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**Objectives**

1. Graph linear equations from their x- and y- intercepts

**Key Terms:**

Finding x- and y- Intercepts

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**A11.4 Relations**

---

**Objectives**

1. Understand a relation identify the domain and range of a relation

**Key Terms:**Relation  
Domain  
Range

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**A11.5 Functions**

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**Objectives**

1. Understand a function and identify the domain and range of a function
2. Use the vertical line test
3. Use function notation

**Key Terms:**Function  
Vertical Line Test  
Function Notation

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**A11.6 Graphing Linear Inequalities in Two Variables**

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**Objectives**

1. Graph linear inequalities in two variables

**Key Terms:**Variable  
Linear Inequalities

**CD 6, Chapter 12: Slope and Forms of Equations of Lines**

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**A12.1 Slope**

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**Objectives**

1. Find the slope of a line given two points of the line

**Key Terms:**

Slope of a Line

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**A12.2 Slope-Intercept Form of a Linear Equation**

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**Objectives**

1. Use the slope-intercept form to graph a linear equation
2. Write an equation of a line given its slope and y-intercept
3. Determine whether two lines are parallel

**Key Terms:**Slope-Intercept Form  
Parallel

---

**A12.3 Point-Slope Form of a Linear Equation**

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**Objectives**

1. Write an equation of a line, given its slope and the coordinates of one point

**Key Terms:**

Point-Slope Form

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**A12.4 Using Two Points to Write Equations of a Line**

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**Objectives**

1. Write an equation of a line, given the coordinates of two points of the line
2. Write an equation of a line parallel to a given line and through a given point

**Key Terms:**Coordinates  
Parallel

**CD 6, Chapter 13: Systems of Linear Equation**

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**A13.1 Graphing Systems of Linear Equations**

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**Objectives**

1. Solve a system of linear equations by graphing

**Key Terms:**

Solution of a System  
Consistent  
Inconsistent

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**A13.2 Using The Substitution Method**

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**Objectives**

1. Use substitution to solve a system of linear equations

**Key Terms:**

Substitution  
Linear Equations

---

**A13.3 Using The Addition Method**

---

**Objectives**

1. Use the addition method to solve a system of linear equations

**Key Terms:**

Linear Equations

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**A13.4 Using Multiplication with the Addition Method**

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**Objectives**

1. Use multiplication with the addition method to solve a system of linear equations

**Key Terms:**

Linear Equations  
Addition Method



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### Chapters Covered:

- **Roots and Radicals, Part I**  
This chapter covers square roots, simplifying square roots, simplifying square roots containing variables, addition and subtraction of radicals, and multiplication of radicals
- **Roots and Radicals, Part II**  
This chapter covers division of radicals, rationalizing the denominator, solving radical equations, the Pythagorean Theorem, and the distance formula

### Recommended Order of Study:

- Print the study guide pages.
- Work the pre-assessment test prior to beginning each lesson to determine skill level and understanding of the topics covered.
- Begin the video lesson as prompted based on the pre-assessment results.
- Work through the video lesson. Use the study guide as a means to take notes, follow along with worked examples, and work additional practice problems.
- Review and/or print the Objective Summaries to reinforce material covered in each lesson
- Work the Practice Problems for each Objective

The Algebra I Interactive Video Tutor is broken down into 16 Chapters which are further divided into lessons and learning objectives. Pre-assessments at the beginning of each Lesson contain questions that gradually increase in difficulty and are designed to test knowledge of each learning Objective. Results of assessments will prescribe at which Objective students should begin study in a particular Section. As in all pre-assessments, students may not score well since they have yet to have exposure to the lesson. Objectives covered in each section are listed on the following pages.

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From there they may continue by working a series of follow-up questions to reinforce their knowledge of material covered. Additionally, they may work pencil and paper problems from the study guides.

**CD 7, Chapter 14: Roots and Radicals, Part I**

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**A14.1 Square Roots**

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**Objectives**

1. Find Square roots of perfect squares
2. Identify rational and irrational numbers

**Key Terms:**

Square Roots  
Positive Square Root  
Negative Square Root  
Rational Numbers  
Irrational Numbers

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**A14.2 Simplifying Square Roots**

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**Objectives**

1. Use the product rule and the quotient rule to simplify radicals

**Key Terms:**

Product Rule for Square Roots  
Quotient Rule for Square Roots

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**A14.3 Simplifying Square Roots  
Containing Variables**

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**Objectives**

1. Solve square roots containing variables

**Key Terms:**

Variables  
Square Roots

---

**A14.4 Addition and Subtraction  
of Radicals**

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**Objectives**

1. Add and subtract like radicals
2. Simplify Radical Expressions, and then add or subtract any like radicals

**Key Terms:**

Like Radicals  
Radical Expressions

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**A14.5 Multiplication of Radicals**

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**Objectives**

1. Multiply and Simplify Radicals

**Key Terms:**

Radical  
Product Rule for Square Roots

**CD 7, Chapter 15: Roots and Radicals, Part II**

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**A15.1 Division of Radicals**

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**Objectives**

1. Divide and simplify radicals

**Key Terms:**

Quotient Rule for Square Roots

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**A15.2 Rationalizing the Denominator**

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**Objectives**

1. Rationalizing denominators containing square roots

**Key Terms:**

Rationalizing Denominator

---

**A15.3 Solving Rational Equations**

---

**Objectives**

1. Solve equations containing square roots of variable expressions

**Key Terms:**

Squaring Property of Equality

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**A15.4 The Pythagorean Theorem**

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**Objectives**

1. Use the Pythagorean Formula to solve triangles

**Key Terms:**

The Pythagorean Theorem

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**A15.5 The Distance Formula**

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**Objectives**

1. Use the distance formula to find the distance between two points on the coordinate plans

**Key Terms:**

The Distance Formula  
Coordinate Plans



The Algebra I Interactive Series is designed to incorporate all modalities of learning into one easy to use learning tool; thereby reinforcing learning by immersing students in a topic. These self-paced tutorials contain assessments, video instruction, interactive follow up problems with hints and tips, post-tests, study guides for pencil and paper note taking and additional practice problems. This series also features useful teacher feedback reports that track students' progress.

### Chapters Covered:

- **Solving Quadratic Equations by the Square Root Property**  
This chapter covers solving equations by the square root property
- **Solving Quadratic Equations by Completing the Square**  
This chapter covers solving quadratic equations by completing the square
- **Solving Quadratic Equations by Using the Quadratic Formula**  
This chapter covers solving equations by using the quadratic formula

### Recommended Order of Study:

- Print the study guide pages.
- Work the pre-assessment test prior to beginning each lesson to determine skill level and understanding of the topics covered.
- Begin the video lesson as prompted based on the pre-assessment results.
- Work through the video lesson. Use the study guide as a means to take notes, follow along with worked examples, and work additional practice problems.
- Review and/or print the Objective Summaries to reinforce material covered in each lesson
- Work the Practice Problems for each Objective

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From there they may continue by working a series of follow-up questions to reinforce their knowledge of material covered. Additionally, they may work pencil and paper problems from the study guides.

**CD 8, Chapter 16: Solving Quadratic Equations**

A16.1 Solving Quadratic Equations  
With the Square Root Property

**Key Terms:**

Quadratic Equation  
Square Root Property

**Objectives**

1. Review the factoring method for solving equations
2. Use the square root property to solve equations

A16.2 Solving Quadratic Equations  
by Completing the Square

**Key Terms:**

Quadratic Equations  
Perfect Square Trinomials

**Objectives**

1. Find perfect square trinomials
2. Solve a quadratic equation by completing the square

A16.3 Solving Quadratic  
Equations Using the Quadratic  
Formula

**Key Terms:**

The Quadratic Formula  
Quadratic Equations

**Objectives**

1. Solve quadratic equations using the quadratic formula