

Algebra COURSE DESCRIPTION

This Algebra course covers all typical Algebra material, over 80 topics in all from adding and subtracting positives and negatives to solving rational equations. Whether you are getting ahead of the curriculum, aiming for better grades, or preparing for the next level with deeper understanding of the concepts, this class will give you a solid foundations needed to succeed in school as the fundamental and important concepts will be taught in great details. Designed for all levels of learners from remedial to the advanced. (Material fee is due on the first day of class).

Homework: A page corresponds to each chapter lesson will be assigned. **Tests:** Chapter tests and exam at the end of course.

Chapter 1 - The Language of Algebra

- Lesson 1 - Variables and Expressions
- Lesson 2 - Order of Operations
- Lesson 3 - Open Sentences
- Lesson 4 - Identity and Equality Properties
- Lesson 5 - The Distributive Property
- Lesson 6 - Commutative and Associative Properties
- Lesson 7 - Logical Reasoning
- Lesson 8 - Graphs and Functions
- Lesson 9 - Statistics: Analyzing Data by Using Tables and Graphs

Chapter 2 - Real Numbers

- Lesson 1 - Rational Numbers on the Number Line
- Lesson 2 - Adding and Subtracting Rational Numbers
- Lesson 3 - Multiplying Rational Numbers
- Lesson 4 - Dividing Rational Numbers
- Lesson 5 - Statistics: Displaying and Analyzing Data -
- Lesson 6 - Probability: Simple Probability and Odds
- Lesson 7 - Square Roots and Real Numbers

Chapter 3 - Solving Linear Equations

- Lesson 1 - Writing Equations
- Lesson 2 - Solving Equations by Using Addition and Subtraction
- Lesson 3 - Solving Equations by Using Multiplication and Division
- Lesson 4 - Solving Multi-Step Equations
- Lesson 5 - Solving Equations with the Variable on Each Side
- Lesson 6 - Ratios and Proportion
- Lesson 7 - Percent of Change
- Lesson 8 - Solving Equations and Formulas
- Lesson 9 - Weighted Averages

Chapter 4 - Graphing Relations and Functions

- Lesson 1 - The Coordinate Plane
- Lesson 2 - Transformations on the Coordinate Plane
- Lesson 3 - Relations
- Lesson 4 - Equations as Relations
- Lesson 5 - Graphing Linear Equations
- Lesson 6 - Functions
- Lesson 7 - Arithmetic Sequences
- Lesson 8 - Writing Equations from Patterns

Chapter 5 - Analyzing Linear Equations

- Lesson 1 - Slope
- Lesson 2 - Slope and Direct Variation
- Lesson 3 - Slope-Intercept Form
- Lesson 4 - Writing Equations in Slope-Intercept Form
- Lesson 5 - Writing Equations in Point-Slope Form
- Lesson 6 - Geometry: Parallel and Perpendicular Lines
- Lesson 7 - Statistics: Scatter Plots and Lines of Fit

Chapter 6 - Solving Linear Inequalities

- Lesson 1 - Solving Inequalities by Addition and Subtraction
- Lesson 2 - Solving Inequalities by Multiplication and Division
- Lesson 3 - Solving Multi-Step Inequalities
- Lesson 4 - Solving Compound Inequalities
- Lesson 5 - Solving Open Sentences Involving Absolute Value
- Lesson 6 - Graphing Inequalities in Two Variables

Chapter 7 - Solving Systems of Linear Equations and Inequalities

- Lesson 1 - Graphing Systems of Equations
- Lesson 2 - Substitution
- Lesson 3 - Elimination Using Addition and Subtraction
- Lesson 4 - Elimination Using Multiplication
- Lesson 5 - Graphing Systems of Inequalities

Chapter 8 - Polynomials

- Lesson 1 - Multiplying Monomials
- Lesson 2 - Dividing Monomials
- Lesson 3 - Scientific Notation
- Lesson 4 - Polynomials
- Lesson 5 - Adding and Subtracting Polynomials
- Lesson 6 - Multiplying a Polynomial by a Monomial
- Lesson 7 - Multiplying Polynomials
- Lesson 8 - Special Products

Chapter 9 - Factoring

- Lesson 1 - Factors and Greatest Common Factors
- Lesson 2 - Factoring Using the Distributive Property
- Lesson 3 - Factoring Trinomials: $x^2 + bx + c$
- Lesson 4 - Factoring Trinomials: $ax^2 + bx + c$
- Lesson 5 - Factoring Differences of Squares
- Lesson 6 - Perfect Squares and Factoring

Chapter 10 - Quadratic and Exponential Functions

- Lesson 1 - Graphing Quadratic Functions
- Lesson 2 - Solving Quadratic Equations by Graphing
- Lesson 3 - Solving Quadratic Equations by Completing the Square
- Lesson 4 - Solving Quadratic Equations by Using the Quadratic Formula
- Lesson 5 - Exponential Functions
- Lesson 6 - Growth and Decay
- Lesson 7 - Geometric Sequences

Chapter 11 - Radical Expressions and Triangles

- Lesson 1 - Simplifying Radical Expressions
- Lesson 2 - Operations with Radical Expressions
- Lesson 3 - Radical Equations
- Lesson 4 - The Pythagorean Theorem
- Lesson 5 - The Distance Formula
- Lesson 6 - Similar Triangles
- Lesson 7 - Trigonometric Ratios

Chapter 12 - Rational Expressions and Equations

- Lesson 1 - Inverse Variation
- Lesson 2 - Rational Expressions
- Lesson 3 - Multiplying Rational Expressions
- Lesson 4 - Dividing Rational Expressions
- Lesson 5 - Dividing Polynomials
- Lesson 6 - Rational Expressions with Like Denominators
- Lesson 7 - Rational Expressions with Unlike Denominators
- Lesson 8 - Mixed Expressions and Complex Fractions
- Lesson 9 - Solving Rational Equations and Inequalities

Chapter 13 - Statistics

- Lesson 1 - Sampling and Bias
- Lesson 2 - Introduction to Matrices
- Lesson 3 - Histograms
- Lesson 4 - Measures of Variation
- Lesson 5 - Box-and-Whisker Plots

Chapter 14 - Probability

- Lesson 1 - Counting Outcomes
- Lesson 2 - Permutations and Combinations
- Lesson 3 - Probabilities of Compound Events
- Lesson 4 - Probability Distributions
- Lesson 5 - Probability Simulations