

Algebra 1  
Course Syllabus  
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Course description

Goal: The main focus of Algebra 1 is on linear functions, coordinate graphing, real numbers, and two-variable equations. Through the study of Algebra 1, the student will:

- Develop proficiency in using algebra to solve problems in everyday life.
- Expand his/her understanding of mathematical concepts.
- Improve his/her logical thinking skills
- Gain an understanding of algebra as a study of the structure of the systems of real and complex numbers.
- Gain an appreciation of how mathematics relates to the world of work.

Grade Level: predominately 9<sup>th</sup>, but open to grades 10-12

Prerequisites: None

Topics covered: by section/topic (Glencoe *Algebra 1* © 2003)

Chapter 1: The Language of Algebra

- 1.1 Variables and Expressions
- 1.2 Order of Operations
- 1.3 Open Sentences
- 1.4 Identity and Equality Properties
- 1.5 The Distributive Property
- 1.6 Commutative and Associative Properties
- 1.7 Logical Reasoning
- 1.8 Graphs and Functions
- 1.9 Statistics: Tables and Graphs

Chapter 2: Real Numbers

- 2.1 Rational Numbers on the Number Line
- 2.2 Adding and Subtracting Rational Number
- 2.3 Multiplying Rational Numbers

- 2.4 Dividing Rational Numbers
- 2.5 Statistics: Displaying and Analyzing Data
- 2.6 Probability: Simple Probability and Odds
- 2.7 Square Roots and Real Numbers

### Chapter 3: Solving Linear Equations

- 3.1 Writing Equations
- 3.2 Solving Equations by Using Addition and Subtraction
- 3.3 Solving Equations by Using Multiplication and Division
- 3.4 Solving Multi-Step Equations
- 3.5 Solving Equations with the variable on Each Side
- 3.6 Ratios and Proportions
- 3.7 Percent of Change
- 3.8 Solving Equations and Formulas
- 3.9 Weighted Averages

### Chapter 4: Graphing Relations and Functions

- 4.1 The Coordinate Plane
- 4.2 Transformations on the Coordinate Plane
- 4.3 Relations
- 4.4 Equations as Relations
- 4.5 Graphing Linear Equations
- 4.6 Functions
- 4.7 Arithmetic Sequence
- 4.8 Writing Equations from Patterns

### Chapter 5: Analyzing Linear Equations

- 5.1 Slope
- 5.2 Slope and Direct Variation
- 5.3 Slope-Intercept Form
- 5.4 Writing Equations in Slope-Intercept Form

5.5 Writing Equations in Point-Slope Form

5.6 Geometry: Parallel and Perpendicular Lines

5.7 Statistics: Scatter Plots and Lines of Fit

#### Chapter 6: Solving Linear Inequalities

6.1 Solving Inequalities by Addition and Subtraction

6.2 Solving Inequalities by Multiplication and Division

6.3 Solving Multi-Step Inequalities

6.4 Solving Compound Inequalities

6.5 Solving Open Sentences Involving Absolute Value

6.6 Graphing Inequalities in Two Variables

#### Chapter 7: Solving Systems of Linear Equations and Inequalities

7.1 Graphing Systems of Equation

7.2 Substitution

7.3 Elimination using Addition and Subtraction

7.4 Elimination Using Multiplication

7.5 Graphing Systems of Inequalities

#### Chapter 8: Polynomials

8.1 Multiplying Monomials

8.2 Dividing Monomials

8.3 Scientific Notation

8.4 Polynomials

8.5 Adding and Subtracting Polynomials

8.6 Multiplying a Polynomial by a Monomial

8.7 Multiplying Polynomials

8.8 Special Products

## Instructional Philosophy:

All students can and should learn algebra. An algebraic way of thinking and problem solving is important for everyone. Algebra 1 is often considered a “gateway” course because its content is necessary for further study in mathematics and the sciences. Students will be provided with as much help and support as possible to ensure success in the course. Students are urged to attend extra help study groups which meet weekly, and to seek extra help from the instructor whenever necessary.

**Expectation:** Students will be expected to meet all the course goals by demonstrating their understanding of the basic concepts of each unit/area/topic. In order to pass the course, students must attain a minimum grade of 70%.

**Delivery Method:** Class activities will include lecture presentations, teacher-student discussions, small group instruction, individual instruction, question and answer sessions, demonstrations, hands-on activities, guided practice, and oral exercises. Written assignments will include problem sets, quizzes, test, projects, and short essays.

**Assessment:** Students will be assessed regularly through the use of homework, daily quizzes, unit tests, and chapter quizzes. Bonus points can be earned through the completion of optional extra-credit projects.

## Course Standards- State Standards (9-12 Mathematics)

9-12.A.1 Use procedures to transform algebraic expressions

9-12.A.2 Use a variety of algebraic concepts and methods to solve equations and inequalities

9-12.A.3 Interpret and develop mathematical models

9-12.A.4 Describe and use properties and behaviors of relations, functions, and inverses

9-12.G.1 Use deductive and inductive reasoning to recognize and apply properties of geometric figures

9-12.G.2 Use properties of geometric figures to solve problems from a variety of perspectives

9-12.M.1 Apply measurement concepts in practical applications

9-12.N.1 Analyze the structural characteristics of the real number system and its various subsystems. Analyze the concept of value, magnitude, and relative magnitude of real numbers.

9-12.N.2 Apply operations within the set of real numbers.

9-12.S.1 Use statistical models to gather, analyze, and display data to draw conclusions

9-12.S.2 Apply the concepts of probability to predict events/outcomes and solve problems.

## Assessment Plan & Grading Scale

### Grading Scale Description of Work

- A 94-100% Consistently demonstrates an exceptional level of quality of work and effort. Has all work in on time and completed to exceed expectations. Shows mastery in evaluating, synthesizing, and applying the knowledge.
- B 87-93% Consistently demonstrates proficient knowledge with a good effort and quality of work. All assignments are completed on time. Demonstrates the ability to evaluate, analyze, synthesize and apply the principles.
- C 80-86% Demonstrates proficient knowledge and the ability to apply knowledge. Work shows average effort. A few assignments may be missing or late.
- D 70-79% Work shows minimal effort and some late assignments. Demonstrates a basic understanding of recalling or comprehending knowledge.
- F 69% and below Understanding is below basic. Work is of poor quality and does not meet standards or expectations.

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