

Algebra I Syllabus

Tentative Course Syllabus

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General Information:

Welcome!

In this course, students are required to complete and turn in all assignments on time. Students will be issued a daily note-taking guide, study guide and practice workbook, and a textbook. Students are required to bring all three to class daily along with binders, pencils, and calculator. As a graduation requirement, students must *PASS* the **GATEWAY MATHEMATICS EXAM**. This exam will be administered on **May 1, 2007**, and will be calculated as 15 % of student's final Algebra I grade.

I am looking forward to an educational and rewarding school year that involves us working together to guarantee that students achieve those expectations.

Course Textbook: *Prentice Hall Mathematics: Algebra I*

Course Description

Algebra I uses problem situations, physicals models, and appropriate technology to extend algebraic thinking and engage student reasoning. Problem solving situations will provide all students an environment that promotes communication and fosters connection within mathematics, to other disciplines, and to the real world. Students will use physical models to represent, explore, and develop abstract concepts. Throughout the course, students will be challenged to think critically to solve algebraic situations. Technology will be used to foster an understanding of the importance of mathematics and technology is today's technological world.

Course Overview

1st Six Weeks

- I. Tools of Algebra
 - A. Using Variables
 - i. Writing algebraic expressions
 - ii. Writing algebraic equations
 - B. Exponents and Order of Operations
 - i. Simplifying and evaluating expressions and formulas
 - ii. Simplifying and evaluating expressions with grouping symbols
 - C. Exploring Real Numbers
 - i. Classifying real numbers
 - ii. Comparing numbers
 - D. Adding Real Numbers
 - i. Adding real numbers
 - ii. Applying addition

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- E. Subtracting Real Numbers
 - i. Subtracting real numbers
 - ii. Applying subtraction
 - F. Multiplying and Dividing Real Numbers
 - i. Multiplying real numbers
 - ii. Dividing real numbers
 - G. The Distributive Property
 - i. Using the distributive property
 - ii. Simplifying algebraic expressions
 - H. Properties of Real Numbers
 - i. Identifying and using properties
 - ii. Using deductive reasoning
- II. Solving Equations
- A. Solving One-Step Equations
 - i. Solving equations using addition and subtraction
 - ii. Solving equations using multiplication and division
 - B. Solving Two-Step Equations
 - i. Solving two-step equations
 - ii. Using deductive reasoning
 - C. Solving Multi-Step Equations
 - i. Using the distributive property to combine like terms
 - ii. Using the distributive property to solve equations
 - D. Equations with Variables on Both Sides
 - i. Solving equations with variables on both sides
 - ii. Special cases: Identities and no solution
 - E. Equations and Problem Solving
 - i. Defining variables
 - ii. Distance-rate-time problems
 - F. Formulas
 - i. Transforming literal equations
 - G. Using Measures of Central Tendency
 - i. Finding mean, median, and mode
 - ii. Stem-and-leaf plots

2nd Six Weeks

- III. A. Inequalities and Their Graphs
 - i. Identifying solutions of inequalities
 - ii. Graphing and writing inequalities in one variable
- B. Solving Inequalities Using Addition and Subtractions
 - i. Using addition to solve inequalities
 - ii. Using subtraction to solve inequalities
- C. Solving Inequalities Using Multiplication and Division
 - i. Using multiplication to solve inequalities
 - ii. Using division to solve inequalities
- D. Solving Multi-Step Inequalities

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- i. Solving inequalities with variables on one side
 - ii. Solving inequalities with variables on both sides
 - E. Compound Inequalities
 - i. Solving compound inequalities containing *and*
 - ii. Solving compound inequalities containing *or*
 - F. Absolute Value Equations and Inequalities
 - i. Solving absolute value equations
 - ii. Solving absolute value inequalities

- IV. Solving and Applying Proportions
 - A. Ratio and Proportion
 - i. Ratios and rates
 - ii. Solving proportions
 - B. Proportions and Similar Figures
 - i. Similar figures
 - ii. Indirect measurement and scale drawings
 - C. Proportions and Percent Equations
 - i. Applying proportions to percent problems
 - ii. Percent equations
 - D. Percent of Change
 - i. Percent of change
 - ii. Percent error
 - E. Applying Ratios to Probability
 - i. Theoretical probability
 - ii. Experimental probability
 - F. Probability of Compound Events
 - i. Finding the probability of independent events
 - ii. Finding the probability of dependent events
 - G. Counting Methods and Permutations (Lesson 12-8)
 - i. Using the multiplication counting principle
 - ii. Finding permutations
 - H. Combinations (Lesson 12-9)
 - i. Combinations
 - ii. Probability with counting techniques

3rd Six Weeks

- V. Graphs and functions
 - A. Relating Graphs to Events
 - i. Interpreting, sketching, and analyzing graphs
 - B. Relations and Functions
 - i. Identifying relations and functions
 - ii. Evaluating functions
 - C. Function rules, tables, and graphs
 - i. Modeling functions
 - D. Writing a function rule
 - i. Writing function rules

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- E. Direct Variation
 - i. Writing the equation of a direct variation
 - ii. Ratios, proportions, and direct variations
 - F. Inverse Variation (Lesson 12-1)
 - i. Solving inverse variations
 - ii. Comparing direct and inverse variation
 - G. Describing number patterns
 - i. Inductive reasoning and number patterns
 - iii. Writing rules for arithmetic sequences
 - H. Geometric Sequences
 - i. Geometric sequences
 - ii. Using a formula
- VI. Linear Equations and Their Graphs
- A. Rate of change and slope
 - i. Finding rates of change
 - ii. Finding slope
 - B. Slope-Intercept form
 - i. Writing linear equations
 - ii. Graphing linear equations
 - C. Standard form
 - i. Graphing equations using intercepts
 - ii. Writing equations in standard form
 - D. Point-slope form and writing linear equations
 - i. Using point-slope form
 - ii. Writing linear equations using data
 - E. Parallel and perpendicular lines
 - i. Parallel lines
 - ii. Perpendicular lines
 - F. Scatter plots and equations
 - i. Writing an equation for a trend line
 - ii. Writing an equation for a line of best fit
 - G. Choosing a linear, quadratic, or exponential model
 - i. Choosing a linear, quadratic, or exponential model
- VII. Systems of Equations and Inequalities
- H. Solving systems by graphing (Lesson 7-1)
 - i. Solving systems by graphing
 - ii. Analyzing special types of systems
 - I. Solving systems using substitution (Lesson 7-2)
 - i. Using substitution
 - J. Solving systems using elimination (Lesson 7-3)
 - i. Adding or subtracting to solve systems
 - ii. Multiplying first to solve systems
- 4th Six Weeks**
- K. Application of linear systems

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- i. Writing systems of linear equations
 - L. Linear inequalities
 - i. Graphing linear inequalities
 - ii. Modeling real-world situations
 - M. Systems of linear inequalities
 - i. Solving systems of linear inequalities by graphing
 - ii. Writing and using systems of linear inequalities
- VIII. Exponents and Exponential Functions
- A. Zero and negative exponents
 - i. Zero and negative exponents
 - ii. Evaluating exponential expressions
 - B. Scientific notation
 - i. Writing numbers in scientific and standard notation
 - ii. Using scientific notation
 - C. Multiplication properties of exponents
 - i. Multiplying powers
 - ii. Working with scientific notation
 - D. More multiplication properties of exponents
 - i. Raising a power to a power
 - ii. Raising a product to a power
 - E. Division properties of exponents
 - i. Dividing powers with the same base
 - ii. Raising a quotient to a power
 - F. Exponential functions
 - i. Evaluating exponential functions
 - ii. Graphing exponential functions
 - G. Growth and decay
 - i. Exponential growth
 - ii. Exponential decay
- IX. Polynomials and factoring
- H. Adding and subtracting polynomials (Lesson 9-1)
 - i. Describing polynomials
 - ii. Adding and subtracting polynomials
 - I. Multiplying and factoring (Lesson 9-2)
 - i. Distributing a monomial
 - ii. Factoring a monomial from a polynomial
 - J. Multiplying binomials (Lesson 9-3)
 - i. Multiplying two binomials
 - ii. Multiplying a trinomial and a binomial
- 5th Six Weeks*
- K. Multiplying special cases
 - i. Finding the square of a binomial
 - ii. Difference of squares

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- L. Factoring trinomials of the type $x^2 + bx + c$
 - i. Factoring trinomials
 - M. Factoring trinomials of the type $ax^2 + bx + c$
 - i. Factoring $ax^2 + bx + c$
 - N. Factoring special cases
 - i. Factoring perfect-square trinomials
 - ii. Factoring the difference of two squares
 - O. Factoring by grouping
 - i. Factoring polynomials with four terms
 - ii. Factoring trinomials by grouping
- X. Quadratic Equations and Functions
- A. Finding and estimating square roots
 - i. Finding square roots
 - ii. Estimating and using square roots
 - B. Solving quadratic equations
 - i. Solving quadratic equations by graphing
 - ii. Solving quadratic equations using square roots
 - C. Factoring to solve quadratic equations
 - i. Solving quadratic equations
 - D. Using the quadratic formula
 - i. Using the quadratic formula
 - ii. Choosing an appropriate method for solving a quadratic equation
 - E. Using the discriminant
 - i. Number of real solutions of a quadratic equation
- XI. Radical Expressions and Equations
- A. Simplifying radicals
 - i. Simplifying radical expressions involving products
 - ii. Simplifying radical expressions involving quotients
 - B. The Pythagorean Theorem
 - i. Solving problems using the Pythagorean Theorem
 - ii. Identifying right triangles
 - C. The Distance and Midpoint Formulas
 - i. Finding the distance between two points
 - ii. Finding the midpoint of a line segment
 - D. Operations with Radical Expressions
 - i. Simplifying sums and differences
 - ii. Simplifying products and quotients
 - E. Solving Radical Equations
 - i. Solving radical equations
 - ii. Solving equations with extraneous solutions
 - F. Graphing square root functions
 - i. Graphing square root functions
 - ii. Translating graphs of square root functions
 - G. Gateway Review

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- i. Prentice Hall TN: Gateway and End-of-course Test Prep Workbook
- ii. Prentice Hall Diagnostic and Benchmark Tests
- iii. Prentice Hall Skills and Concepts Review
- iv. Prentice Hall Test Taking Strategies with transparencies
- v. Hollandays Questions of the Day Transparencies
- vi. Gateway Coach books
- vii. Teacher-selected sample problems and tests
- viii. Graphing calculators

6th Six Weeks

XII. Continued Gateway Review with practice tests

XIII. Rational Expressions and Functions

- A. Graphing rational functions
 - i. Graphing rational functions
 - ii. Types of functions
- B. Simplifying rational expressions
 - i. Simplifying rational expressions
- C. Multiplying and dividing rational expressions
 - i. Multiplying rational expressions
 - ii. Dividing rational expressions
- D. Dividing polynomials
 - i. Dividing polynomials
- E. Adding and subtracting rational expressions
 - i. Adding and subtracting rational expressions with like denominators
 - ii. Adding and subtracting rational expressions with unlike denominators
- F. Solving rational equations
 - i. Solving rational equations
 - ii. Solving proportions

Required Supplies:

- ✓ 3-ring binder (at least $1\frac{1}{2}$ inches) with notebook and graph paper, and completed assignments
- ✓ Textbook
- ✓ Daily Note taking Guide and Study Guide & Practice workbooks
- ✓ Pencil (all work is to be completed in pencil. Failure to do so will result in a 0% grade for the assignment.)
- ✓ Ink pen (preferably red, blue, or green). Papers should be headed using ink. All homework and class work should be **checked and corrected in ink.** (Failure to do so will result in a 0% grade for the assignment.)
- ✓ Scientific or graphing calculator

Binders will be graded twice each six weeks (once at the middle and once at the end). Students will be given, in advance, a checklist detailing the requirements.

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Progress Report Dates:

1 st Six Weeks 9/5/06	2 nd Six Weeks 10/17/06	3 rd Six Weeks 12/05/06
4 th Six Weeks 01/30/06	5 th Six Weeks 03/20/06	6 th Six Weeks 05/08/06

Report Card Dates:

1 st Six Weeks 10/04/06	2 nd Six Weeks 11/15/06	3 rd Six Weeks 01/17/06
4 th Six Weeks 02/28/06	5 th Six Weeks 04/25/06	6 th Six Weeks <i>mailed</i>

Assessments (Approximate quiz/test schedule):

Students will generally take at least one quiz each week.

Test 1—3rd week

Test 2—6th week

Gateway Mathematics Exam (May 1, 2007)

Note: This is a tentative pacing schedule that is subject to change.

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