

Honors Algebra I Syllabus 2011-12

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Course Overview:

This high school level course is based on South Carolina Curriculum Standards for Algebra I and is the same for both middle and high school. The main topics taught will be Solving Equations in One Variable, One Variable Linear Inequalities, Using Algebra and Graphs to Describe Relationships, Graphing and Analyzing Linear Functions, Linear Systems and Interacting Linear Functions, Exponents and Exponential Functions, Polynomials and Factoring, Quadratic Equations and Functions, Other Functions.

Throughout this course, a conscious effort will be made to include technology as a means of enhancing the required topics. In Algebra 1, hand-held graphing calculators are required as part of instruction and assessment. Students should use a variety of representations (concrete, numerical, algorithmic, graphical), tools (matrices, data), and technologies to model mathematical situations to solve meaningful problems. The technologies include, but are not limited to, powerful and accessible hand-held calculators as well as computers with graphing capabilities.

Grading Policy:

Coursework	Greenville County Grading Scale
10% Classwork/Homework	A 93-100
30% - Quizzes/Mini-Projects	B 85-92
60% - Tests/Projects	C 77-84
The Midterm Exam will make up 20% of the First Semester grade.	D 70-76
The EOC Exam will make up 20% of the Final Grade.	F 69 or below

Communication:

Assignments and dates of assessments will be posted on my school website, and updated on a regular basis.

Contact will be made through emailed grade reports, phone calls and e-mail, as needed.

Parents are encouraged to access students' grades online and contact me as needed, using the information provided above.

Assigning High School Credit:

According to the Greenville County School system, "Students who take Algebra 1 in middle school will be enrolled in Honors Algebra I and will earn an extra one half quality point in accordance with the Uniform Grading Scale. Students and their parents should also be aware that any student taking a Carnegie Unit prior to his or her ninth grade year may retake any such course during the ninth grade year. In this case, only the ninth grade attempt will be used in figuring the student's GPR and only the ninth grade attempt will show in the transcript." All students must earn 3 math credits (one each for 6th, 7th, and 8th grades) before entering ninth grade.

Students with a grade of 85 and above generally will be recommended for placement in Honors Geometry in eighth grade.

Students with a grade of 77 – 84 generally will be recommended to retake Honors Algebra in eighth grade.

Unit credit is given for high school subjects successfully completed by students. **A student must be in attendance at least 170 days to receive credit for a one-year course.** Exceptions will be made for cases of extended or chronic illness when certified by a physician and for absences for emergencies when excused by the principal.

Materials and Resources:

1. **Binder:** A binder with lined paper, graph paper, and dividers is *required*.
2. **Pencils and erasers:** Mechanical pencils work best. Work must be done in pencil.
3. **Calculator:** We will use TI83 or TI84 graphing calculators. It is *strongly recommended* that your child own one. He/she will use it throughout high school.
4. **Textbook and workbook:** Glencoe Algebra I

http://www.glencoe.com/sec/math/algebra/algebra1/algebra1_05/

This link will direct you to the Glencoe Website specifically for the ALGEBRA textbook. Students can access many features of the website (extra examples, self-check quizzes, sample tests, vocabulary review games, etc.) but need the access code provided in class to access the Online Student Edition.

<http://www.brightstorm.com/math/algebra>

This website has videos of teachers teaching Algebra lessons. Students can follow the user-friendly links to get to topics as we study them, and use the video summary and problems to help you review or learn each topic.

Assignment Policy:

LATE WORK IS NOT ACCEPTED. This is a high-school course, following high school expectations (the 7th grade Work Recovery Policy does not apply.) Practice problems are assigned most days of the week. Assignments are due the next school day unless specified otherwise.

To earn full credit, work must be:

- complete (all assigned problems have been done)
- in pencil
- turned in on time
- labeled with the student's name, class period, assignment page number and problem numbers
- have all work shown (as demonstrated in class)

Work that is incomplete, but otherwise of good quality, may be graded based on the amount complete, at the teacher's discretion. (For example, if a few problems have been skipped but the work is otherwise of good quality, a student might earn an 80 instead of 100 points.)

Make Up Work (due to absence):

When students return to school from an absence, it is her/his responsibility to gather all worked missed. Generally, tests and quizzes that need to be made up will not be done during class time. Please arrange to make-up quizzes or tests during before or after school. All make-up work must be completed within five (5) days of the return to school.

Classroom Procedures:

On most days, our classes will follow this progression:

1. Warm-up.
 - Students are expected to enter class quietly, take out their homework for Mrs. Magnuski to see it, and complete the warm-up activity.
 - Sharpen pencils and throw away trash before class begins.
 - Warm-up Problems should be solved on one page all week, and will be collected on Fridays as a "ticket out the door."
2. Check Homework and discuss correct solution strategies, as needed.
3. Introduce new objective(s) with vocabulary notes and sample problems.
4. Practice individually and with partners.
5. Review the day's objective(s).
6. Assign homework. Assignments are due the next school day unless specified otherwise.

Classroom Behavior Expectations:

- Be on time.
- Bring all required materials.
- Stay in your seat.
- Raise your hand and wait for permission to speak.
- Show respect to everyone.

Any behavior that interferes with the learning of self or others cannot be allowed and will be dealt with accordingly and consistently. The 7th grade Quality Point System will be followed.

Units of Instruction:

Unit 1	Solving Equations in One Variable
Unit 2	One Variable Linear Inequalities
Unit 3	Using Algebra and Graphs to Describe Relationships
Unit 4	Graphing and Analyzing Linear Functions
Unit 5	Linear Systems and Interacting Linear Functions
Unit 6	Exponents and Exponential Functions
Unit 7	Polynomials and Factoring
Unit 8	Quadratic Equations and Functions
Unit 9	Other Functions

PASS Testing May 7-11, 2012

End of Course Exam Mid-May, 2012

Extension Topics

Algebra 1 Standards:

Elementary Algebra Overview – State Standards

The academic standards for the elementary algebra core area establish the process skills and core content for Algebra 1, Mathematics for the Technologies 1, and Mathematics for the Technologies 2, which should provide students with the mathematics skills and conceptual understanding necessary for them to further their mathematical education or to pursue mathematics-related technical careers. These standards will be the basis for the development of the items on the state-required end-of-course examination for Algebra 1 and Mathematics for the Technologies 2.

The content of the elementary algebra standards encompasses the real number system; operations involving exponents, matrices, and algebraic expressions; relations and functions; writing and solving linear equations; graphs and characteristics of linear equations; and quadratic relationships and functions. Teachers, schools, and districts should use the elementary algebra standards to make decisions concerning the structure and content of Algebra 1, Mathematics for the Technologies 1, and Mathematics for the Technologies 2. Content in these three courses may go beyond the elementary algebra standards.

All courses based on the academic standards for elementary algebra must include instruction using the mathematics process standards, allowing students to engage in problem solving, decision making, critical thinking, and applied learning. Educators must determine the extent to which such courses or individual classes may go beyond these standards. Such decisions will involve choices regarding additional content, activities, and learning strategies and will depend on the objectives of the particular courses or individual classes.

In all courses based on the elementary algebra standards, hand-held graphing calculators are required for instruction and assessment. Students should learn to use a variety of ways to represent data, to use a variety of mathematical tools such as graph paper, and to use technologies such as graphing calculators to solve problems.

Note: The term *including* appears in parenthetical statements in the high school mathematics indicators to introduce a list of specifics that are intended to clarify and focus the teaching and learning of the particular concept. That is, within these parenthetical including statements are specified the components of the indicator that are critical for the particular core area with regard both to the state assessments and to the management of time in the classroom. While instruction must focus on the entire indicator, educators must be certain to cover the components specified in the parenthetical *including* statements.

The mathematical processes provide the framework for teaching, learning, and assessing in all high school mathematics core courses. Instructional programs should be built around these processes.

Standard EA-1: The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.

Indicators

- EA-1.1 Communicate a knowledge of algebraic relationships by using mathematical terminology appropriately.
- EA-1.2 Connect algebra with other branches of mathematics.
- EA-1.3 Apply algebraic methods to solve problems in real-world contexts.
- EA-1.4 Judge the reasonableness of mathematical solutions.
- EA-1.5 Demonstrate an understanding of algebraic relationships by using a variety of representations (including verbal, graphic, numerical, and symbolic).
- EA-1.6 Understand how algebraic relationships can be represented in concrete models, pictorial models, and diagrams.
- EA-1.7 Understand how to represent algebraic relationships by using tools such as handheld computing devices, spreadsheets, and computer algebra systems (CASs).

Standard EA-2: The student will demonstrate through the mathematical processes an understanding of the real number system and operations involving exponents, matrices, and algebraic expressions.

Indicators

- EA-2.1 Exemplify elements of the real number system (including integers, rational numbers, and irrational numbers).
- EA-2.2 Apply the laws of exponents and roots to solve problems.
- EA-2.3 Carry out a procedure to perform operations (including multiplication and division) with numbers written in scientific notation.
- EA-2.4 Use dimensional analysis to convert units of measure within a system.
- EA-2.5 Carry out a procedure using the properties of real numbers (including commutative, associative, and distributive) to simplify expressions.
- EA-2.6 Carry out a procedure to evaluate an expression by substituting a value for the variable.
- EA-2.7 Carry out a procedure (including addition, subtraction, multiplication, and division by a monomial) to simplify polynomial expressions.
- EA-2.8 Carry out a procedure to factor binomials, trinomials, and polynomials by using various techniques (including the greatest common factor, the difference between two squares, and quadratic trinomials).
- EA-2.9 Carry out a procedure to perform operations with matrices (including addition, subtraction, and scalar multiplication).
- EA-2.10 Represent applied problems by using matrices.

Standard EA-3: The student will demonstrate through the mathematical processes an understanding of relationships and functions.

Indicators

- EA-3.1 Classify a relationship as being either a function or not a function when given data as a table, set of ordered pairs, or graph.
- EA-3.2 Use function notation to represent functional relationships.
- EA-3.3 Carry out a procedure to evaluate a function for a given element in the domain.
- EA-3.4 Analyze the graph of a continuous function to determine the domain and range of the function.
- EA-3.5 Carry out a procedure to graph parent functions (including $y = x$, $y = x^2$, $y = \sqrt{x}$, $y = |x|$, and $y = \frac{1}{x}$).
- EA-3.6 Classify a variation as either direct or inverse.
- EA-3.7 Carry out a procedure to solve literal equations for a specified variable.
- EA-3.8 Apply proportional reasoning to solve problems.

Standard EA-4: The student will demonstrate through the mathematical processes an understanding of the procedures for writing and solving linear equations and inequalities.

Indicators

- EA-4.1 Carry out a procedure to write an equation of a line with a given slope and a y-intercept.
- EA-4.2 Carry out a procedure to write an equation of a line with a given slope passing through a given point.
- EA-4.3 Carry out a procedure to write an equation of a line passing through two given points.
- EA-4.4 Use a procedure to write an equation of a trend line from a given scatterplot.
- EA-4.5 Analyze a scatterplot to make predictions.
- EA-4.6 Represent linear equations in multiple forms (including point-slope, slope-intercept, and standard).
- EA-4.7 Carry out procedures to solve linear equations for one variable algebraically.
- EA-4.8 Carry out procedures to solve linear inequalities for one variable algebraically and then to graph the solution.
- EA-4.9 Carry out a procedure to solve systems of two linear equations graphically.
- EA-4.10 Carry out a procedure to solve systems of two linear equations algebraically.

Standard EA-5: The student will demonstrate through the mathematical processes an understanding of the graphs and characteristics of linear equations and inequalities.

Indicators

- EA-5.1 Carry out a procedure to graph a line when given the equation of the line.
- EA-5.2 Analyze the effects of changes in the slope, m , and the y-intercept, b , on the graph of $y = mx + b$.
- EA-5.3 Carry out a procedure to graph the line with a given slope and a y-intercept.
- EA-5.4 Carry out a procedure to graph the line with a given slope passing through a given point.
- EA-5.5 Carry out a procedure to determine the x-intercept and y-intercept of lines from data given tabularly, graphically, symbolically, and verbally.
- EA-5.6 Carry out a procedure to determine the slope of a line from data given tabularly, graphically, symbolically, and verbally.
- EA-5.7 Apply the concept of slope as a rate of change to solve problems.
- EA-5.8 Analyze the equations of two lines to determine whether the lines are perpendicular or parallel.
- EA-5.9 Analyze given information to write a linear function that models a given problem situation.
- EA-5.10 Analyze given information to determine the domain and range of a linear function in a problem situation.
- EA-5.11 Analyze given information to write a system of linear equations that models a given problem situation.
- EA-5.12 Analyze given information to write a linear inequality in one variable that models a given problem situation.

Standard EA-6: The student will demonstrate through the mathematical processes an understanding of quadratic relationships and functions.

Indicators

- EA-6.1 Analyze the effects of changing the leading coefficient a on the graph of $y = ax^2$.
- EA-6.2 Analyze the effects of changing the constant c on the graph of $y = x^2 + c$.
- EA-6.3 Analyze the graph of a quadratic function to determine its equation.
- EA-6.4 Carry out a procedure to solve quadratic equations by factoring.
- EA-6.5 Carry out a graphic procedure to approximate the solutions of quadratic equations.
- EA-6.6 Analyze given information to determine the domain of a quadratic function in a problem situation.