

Spectrum Program

Course Title

Algebra I Honors

Course Description

Algebra I Honors is an honors-level high school mathematics course covering equations and functions, properties of real numbers, solving and graphing linear equations and functions, solving and graphing linear inequalities, exponents and exponential functions, polynomials and factoring, quadratic equations and functions, radicals and geometry connections, and rational equations and functions. Students completing this course are prepared for Algebra II. A graphing calculator is required.

Successful completion of this course will prepare students for Geometry and/or Algebra II high school courses. Students and parents are encouraged to check with their own schools as to their acceptance of completed CTD coursework as credit for acceleration.

Outcomes

Upon successful completion of this course, students will:

- a. have developed an understanding of the concepts of algebraic expressions, equations and functions
- b. be able to apply the concepts of algebraic expressions, equations, and functions
- c. demonstrate a thorough understanding of the properties of real numbers
- d. be able to solve linear equations, graph linear equations and functions, and write linear equations of different forms
- e. demonstrate proficiency with solving and graphing linear inequalities
- f. be able to solve systems of equations and inequalities
- g. understand and apply the concepts of exponents and exponential functions
- h. be able to compute with, solve, and factor polynomials
- i. be able to graph and solve quadratic equations and functions
- j. be able to graph square root functions, simplify radical expressions and solve radical equations
- k. be able to apply their knowledge of radical equations to geometric situations
- l. be able to model inverse variation, graph rational functions and divide polynomials
- m. be able to simplify and compute rational expressions
- n. be able to solve rational equations
- o. have demonstrated the ability to apply concepts to problem solving situations
- p. utilize the graphing calculator properly

Resources and Materials

Larson, Ron, Laurie Boswell, Timothy D. Kanold, and Lee Stiff. Algebra 1. Evanston: McDougal Littell, 2006. ISBN #: 9780618594023

The students need to bring the following materials to class daily:

- a. A spiral bound multi-subject notebook or a three-ring binder

- b. A folder for graded assignments
- c. Pencils
- d. A graphing calculator preferably from the following list of Texas Instrument Calculators: TI 83+, TI 83+ Silver Edition, TI 84+, or TI 84+ Silver Edition

Student Evaluation and Grading Policies

a. CTD Grading Scale

A+	100-97%	A	96-93%	A-	92-90%
B+	89-87%	B	86-83%	B-	82-80%
C+	79-77%	C	76-73%	C-	72-70%
D+	69-67%	D	66-63%	D-	62-60%
F	below 60%				

- b. The final grade will be determined by completed assignments (25%) and test scores (75%).

Schedule

Throughout the course, students will work to gain a mastery of the material in a variety of ways. They will be presented with material through lectures, examples, and activities. In addition, students will be given daily assignments, which will be completed both in and out of class. The students will experience both individual and group assignments. Instruction will be differentiated through tiered assignments and flexible grouping. In-class assignments will focus on a key concept and be adjusted to the students' ability levels in order to ensure that students are working with appropriately challenging tasks. Students will work as a part of many groups throughout the summer, and for the most part, groups will be assigned by the teacher. At times, students will be placed in groups based on readiness for the material. Other times, they will be placed randomly or based on learning style. This strategy allows students to work with a wide variety of peers.

The teacher and TA will work closely with students to ensure successful completion of the assignments and growth in their understanding of Algebra I. The following schedule will be followed in order to give students an in-depth and comprehensive understanding of Algebra I.

Week 1

Date(s)	Topic(s)	In-class Activities	Graded Assignments and/or Assessment	Instructional Strategies
Monday 6.29.09	*Pre-test *Chapter 1 <i>Expressions, Equations, and Functions</i>	-evaluate and write algebraic expressions -write equations and inequalities -represent functions as rules, tables and graphs -utilizing a problem solving plan	Course Pre-Test Chapter 1 Assignment	Lecture Flexible Grouping <i>*random grouping</i>

Tuesday 6.30.09	*Chapter 2 <i>Properties of Real Numbers</i>	-using integers and rational numbers -compute with rational numbers -apply the distributive property -square roots and comparison of real numbers	Test Chapter 1 Chapter 2 Assignment	Lecture Tiered Assignments Flexible Grouping
Wednesday 7.1.09	*Chapter 3 <i>Solve Linear Equations</i>	-solve single and multi-step equations -solve equations with variables on both sides -write ratios and proportions -solve proportions and percent problems -rewrite equations and formulas	Test Chapter 2 Chapter 3 Assignment	Lecture Tiered Assignments Flexible Grouping
Thursday 7.2.09	*Chapter 4 <i>Graphing Linear Equations and Functions</i>	-plot points in the coordinate plane -graph linear equations (manually and on the graphing calculator) -find slope and rate of change -graph linear equations using intercepts and slope-intercept form -model direct variation -graph linear functions	Chapter 3 Test Chapter 4 Assignment	Lecture Tiered Assignments Flexible Grouping
Friday 7.3.09	*Chapter 5 <i>Writing Linear Equations</i>	-write linear equations in slope-intercept form, point-slope form and standard form -use linear equations in slope-intercept form -write equations of parallel and perpendicular lines	Test Chapter 4 Chapter 5 assignment	Lecture Tiered Assignments Flexible Grouping

Week 2

Date(s)	Topic(s)	In-Class Activities	Graded Assignments and/or Assessment	Instructional Strategies
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Monday 7.6.09	* Chapter 6 <i>Solving and graphing linear equations</i>	-solve inequalities -solve compound inequalities -solve absolute value equations and inequalities -graph linear equations in two variables (manually and with graphing calculator)	Test Chapter 5 Chapter 6 assignment	Lecture Tiered Assignments Flexible Grouping
Tuesday 7.7.09	*Chapter 7 <i>Systems of Equations and Inequalities</i>	-solve linear systems by graphing, by substitution, and by linear combinations -solve special types of linear systems -solve systems of linear inequalities (manually and on the graphing calculator)	Test Chapter 6 Chapter 7 assignment	Lecture Tiered Assignments Flexible Grouping
Wednesday 7.8.09	*Chapter 8 <i>Exponents and Exponential Functions</i>	-apply exponential properties -define and apply zero and negative exponents -apply scientific notation -write and graph exponential decay functions	Test Chapter 7 Chapter 8 assignment	Lecture Tiered Assignments Flexible Grouping
Thursday 7.9.09	*Chapter 9 <i>Polynomials and Factoring</i>	-add, subtract, and multiply polynomials -special products of polynomials -solve polynomial equations in factored form -factor polynomials -factor special products	Test Chapter 8 Chapter 9 assignment	Lecture Tiered Assignments Flexible Grouping
Friday 7.10.09	*Chapter 10 <i>Quadratic Equations and Functions</i>	-graph quadratic equations and functions (manually and with a graphing calculator) -solve quadratic equations by graphing, using square roots, completing the square and using the quadratic formula -interpret the discriminant -compare linear, exponential, and quadratic models	Test Chapter 9 Chapter 10 assignment	Lecture Tiered Assignments Flexible Grouping

Summer Sample

Week 3

Date(s)	Topic(s)	In-Class Activities	Graded Assignments and/or Assessment	Instructional Strategies
Monday 7.13.09	*Chapter 11 <i>Radicals and Geometry Connections</i>	-graph square root functions manually and with the graphing calculator -simplify radical expressions -solve radical equations -apply the Pythagorean Theorem and its converse -apply the distance and midpoint formulas	Test Chapter 10 Chapter 11 Assignment	Lecture Tiered Assignments Flexible Grouping
Tuesday 7.14.09	* Chapter 12 <i>Rational Equations and Functions</i>	-model inverse variation -graph rational functions manually and with a graphing calculator -divide polynomials -simplify rational expressions -multiply and divide rational expressions -solve rational equations	Test Chapter 11 Chapter 12 Assignment	Lecture Tiered Assignments Flexible Grouping
Wednesday 7.15.09	Complete Chapter 12	-review for final exam	Test Chapter 12 Course Review Assignment	Flexible Grouping <i>*random grouping</i>
Thursday 7.16.09	Course Review	-Review for final exam	Final Exam	Flexible Grouping <i>*random grouping</i>
Friday 7.17.09	End of Course	-Complete Final Exam		