Warren County School District
Planned Instruction

Course Description

Course Title: Honors Algebra 1
Course Number: 00202
Course Prerequisites: Completion of Advanced Mathematics – Grade 7 and a calculated average of an 80% based on three placement assessments and the average of the 1st three marking periods.

Course Description:
Honors Algebra I is a course designed for those students able to complete calculus prior to entering college. Changes in our society and technology require a strong background in basic algebra skills. Therefore, algebra concepts are an integral part of all secondary mathematics courses. This course provides an intense study of algebraic theory that will be expanded in Algebra II Honors, Geometry Honors, and additional advanced math courses (3 credits in high school are required). It uses practical problems to apply theories and connect algebra to the real world. Honors Algebra I is intended for college-bound students who have an aptitude or interest in mathematics. It provides them with the opportunity to complete an additional year of advanced mathematics. A district-wide final exam is required.

Keystone Exams are required of all students who take any Algebra 1 course, in addition to the PSSAs, for graduation. If this state-mandated test is not passed, remediation will be required, and students will retake the exam. Even though high school credit is not awarded, by passing the Keystone exam, students will be fulfilling a requirement for graduation.

Suggested Grade Level: 8th Grade
Length of Course: One Semester X Two Semesters Other
Units of Credit: 1 (Insert NONE if appropriate.)

PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certification(s)
(Insert certificate title and CSPG#) Mathematics (7-12), Middle Level Mathematics

Certification verified by WCSD Human Resources Department:
X Yes _____ No

Board Approved Textbooks, Software, Materials:
Title: Algebra 1
Publisher: Houghton Mifflin
ISBN #: 0-395-53590-5
Copyright Date: 1992
Date of WCSD Board Approval:
BOARDS APPROVAL:

Date Written: June 11, 2014
Date Approved: September 8, 2014; August 29, 2016 Updated Credit and Data System Information
Implementation Year: 2014-2015

Suggested Supplemental Materials: (List or insert None)
Probability dice, spinner, calculator (scientific and/or graphing), ruler, PSSA and Keystone formula sheets, Geometry Sketchpad, and Study Island.

Course Standards

PA Academic Standards: (List by Number and Description)
2.1 Numbers and Operations: (E) The Number System, (F) Number and Quantity
2.2 Algebraic Concepts: (B) Expressions and Equations, (C) Functions, (D) Algebra
2.3 Geometry: (A) Geometry
2.4 Measurement, Data, and Probability: (B) Statistics and Probability

WCSD Academic Standards:
None

Industry or Other Standards:

Keystone Anchors:
A1.1.1.1 Represent and/or use numbers in equivalent forms (e.g., integers, fractions, decimals, percents, square roots, and exponents).
A1.1.1.2 Apply number theory concepts to show relationships between real numbers in problem-solving settings.
A1.1.1.3 Use exponents, roots, and/or absolute values to solve problems.
A1.1.1.4 Use estimation strategies in problem-solving situations.
A1.1.1.5 Simplify expressions involving polynomials.
A1.1.2.1 Write, solve, and/or graph linear equations using various methods.
A1.1.2.2 Write, solve, and/or graph systems of linear equations using various methods.
A1.1.3.1 Write, solve, and/or graph linear inequalities using various methods.
A1.1.3.2 Write, solve, and/or graph systems of linear inequalities using various methods.
A1.2.1.1 Analyze and/or use patterns or relations.
A1.2.1.2 Interpret and/or use linear functions and their equations, graphs, or tables.
A1.2.2.1 Describe, compute, and/or use the rate of change (slope) of a line.
A1.2.2.2 Analyze and/or interpret data on a scatter plot.
A1.2.3.1 Use measures of dispersion to describe a set of data.
A1.2.3.2 Use data displays in problem-solving settings and/or to make predictions.
A1.2.3.3 Apply probability to practical situations.

SPECIAL EDUCATION AND GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student’s Individual Education Plan (IEP) or Gifted Individual Education Plan (GIEP).
### Specific Educational Objectives/Corresponding Standards and Eligible Content Where Applicable

(\text{List Objectives, PA Standards #’s, Other Standards (see samples at end)})

#### PA Standard: 2.1 Numbers and Operations

<table>
<thead>
<tr>
<th>Performance Indicators</th>
<th>1</th>
<th>2</th>
<th>Assessment</th>
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<tbody>
<tr>
<td><strong>E</strong> The Number System</td>
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<tr>
<td>CC.2.1.8.E.1 Distinguish between rational and irrational numbers using their properties.</td>
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<td>Formative Assessments:</td>
</tr>
<tr>
<td>CC.2.1.6.E.3 Develop and/or apply number theory concepts to find common factors and multiples.</td>
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<td>• Observation</td>
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<tr>
<td>CC.2.1.8.E.4 Estimate irrational numbers by comparing them to rational numbers.</td>
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<td>• Evaluate written work</td>
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<tr>
<td><strong>F</strong> Number and Quantity</td>
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<tr>
<td>CC.2.1.HS.F.1 Apply and extend the properties of exponents to solve problems with rational exponents.</td>
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<td>• Performance assessment</td>
</tr>
<tr>
<td>CC.2.1.HS.F.2 Apply properties of rational and irrational numbers to solve real-world or mathematical problems.</td>
<td></td>
<td></td>
<td>• Tests/quizzes</td>
</tr>
<tr>
<td>CC.2.1.HS.F.3 Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.</td>
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<td></td>
<td>• Evaluate oral response</td>
</tr>
<tr>
<td>CC.2.1.HS.F.4 Use units as a way to understand problems and to guide the solution of multi-step problems.</td>
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<td></td>
<td>• Problem-solving activity</td>
</tr>
<tr>
<td>CC.2.1.HS.F.5 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</td>
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<td>• Self-evaluation</td>
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</table>

#### PA Standard: 2.2 Algebraic Concepts

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<tr>
<td><strong>B.</strong> Expressions and Equations</td>
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<td>Formative Assessments:</td>
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<tr>
<td>CC.2.2.7.B.3 Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.</td>
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<td>• Observation</td>
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<tr>
<td>CC.2.2.8.B.1 Apply concepts of radicals and integer exponents to generate equivalent expressions.</td>
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<td>• Evaluate written work</td>
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<tr>
<td>CC.2.2.8.B.2 Understand the connections between proportional relationships, lines, and linear equations.</td>
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<td></td>
<td>• Performance assessment</td>
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<tr>
<td>CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.</td>
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<td>• Tests/quizzes</td>
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<tr>
<td><strong>C.</strong> Functions</td>
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<td>Summative Assessments:</td>
</tr>
<tr>
<td>CC.2.2.8.C.1</td>
<td></td>
<td></td>
<td>• Evaluate oral response</td>
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<td></td>
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<td>• Problem-solving activity</td>
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<td>• Self-evaluation</td>
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<td>• CDTs</td>
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<td>• Venn diagram</td>
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<td>• Homework</td>
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\text{X – performance assessed during that semester}
Define, evaluate, and compare functions.

**CC.2.2.8.C.2**
Use concepts of functions to model relationships between quantities.

**CC.2.2.HS.C.1**
Use the concept and notation of functions to interpret and apply them in terms of their context.

**CC.2.2.HS.C.2**
Graph and analyze functions and use their properties to make connections between the different representations.

**CC.2.2.HS.C.3**
Write functions or sequences that model relationships between two quantities.

**CC.2.2.HS.C.4**
Interpret the effects transformations have on functions and find the inverses of functions.

**CC.2.2.HS.C.5**
Construct and compare linear, quadratic, and exponential models to solve problems.

**CC.2.2.HS.C.6**
Interpret functions in terms of the situations they model.

D. Algebra

**CC.2.2.HS.D.1**
Interpret the structure of expressions to represent a quantity in terms of its context.

**CC.2.2.HS.D.2**
Write expressions in equivalent forms to solve problems.

**CC.2.2.HS.D.3**
Extend the knowledge of arithmetic operations and apply to polynomials.

**CC.2.2.HS.D.5**
Use polynomial identities to solve problems.

**CC.2.2.HS.D.6**
Extend the knowledge of rational functions to rewrite in equivalent forms.

**CC.2.2.HS.D.7**
Create and graph equations or inequalities to describe numbers or relationships.

**CC.2.2.HS.D.8**
Apply inverse operations to solve equations or formulas for a given variable.

**CC.2.2.HS.D.9**
Use reasoning to solve equations and justify the solution method.

**CC.2.2.HS.D.10**
Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

PA Standard: 2.3 Geometry

<table>
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<tbody>
<tr>
<td>A. Geometry</td>
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X – performance assessed during that semester
**CC.2.3.8.A.1**  
Apply the concepts of volume of cylinders, cones, and spheres to solve real-world and mathematical problems.

**CC.2.3.8.A.2**  
Understand and apply congruence, similarity, and geometric transformations using various tools.

**CC.2.3.8.A.3**  
Understand and apply the Pythagorean Theorem to solve problems.

**Formative Assessments:**
- Observation
- Evaluate written work
- Performance assessment
- Tests/quizzes
- Evaluate oral response
- Problem-solving activity
- Self-evaluation
- CDTs
- Venn diagram
- Homework

**Summative Assessments:**
- Test
- Cooperative project
- PSSA
- Keystone
- Final Exam

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**PA Standard: 2.4 Measurement, Data and Probability**

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<tr>
<td><strong>B. Statistics and Probability</strong></td>
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<tr>
<td><strong>CC.2.4.7.B.3</strong> Investigate chance processes and develop, use, and evaluate probability models.</td>
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<tr>
<td><strong>CC.2.4.8.B.1</strong> Analyze and/or interpret bivariate data displayed in multiple representations.</td>
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<tr>
<td><strong>CC.2.4.HS.B.1</strong> Summarize, represent, and interpret data on a single count or measurement variable.</td>
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<tr>
<td><strong>CC.2.4.HS.B.2</strong> Summarize, represent, and interpret data on two categorical and quantitative variables.</td>
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<tr>
<td><strong>CC.2.4.HS.B.3</strong> Analyze linear models to make interpretations based on the data.</td>
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<tr>
<td><strong>CC.2.4.HS.B.4</strong> Recognize and evaluate random processes underlying statistical experiments.</td>
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<tr>
<td><strong>CC.2.4.HS.B.5</strong> Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.</td>
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<tr>
<td><strong>CC.2.4.HS.B.7</strong> Apply the rules of probability to compute probabilities of compound events in a uniform probability model.</td>
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**Formative Assessments:**
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**Summative Assessments:**
- Test
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- Keystone
- Final Exam
ASSESSMENTS

PSSA Assessment Anchors Addressed: The teacher must be knowledgeable of the PDE Assessment Anchors and/or Eligible Content and incorporate them into this planned instruction. Current assessment anchors can be found at pde@state.pa.us.

Formative Assessments: The teacher will develop and use standards-based assessments throughout the course.

Portfolio Assessment: _____ Yes _____ X ____ No

District-wide Final Examination Required: _____ X ____ Yes _____ No

Course Challenge Assessment - None

REQUIRED COURSE SEQUENCE AND TIMELINE
(Content must be tied to objectives)

<table>
<thead>
<tr>
<th>Content Sequence</th>
<th>Dates</th>
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<tr>
<td>See Curriculum Map</td>
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</table>

Objectives:

Students will:

Make sense of problems and persevere in solving them.
Reason abstractly and quantitatively.
Construct viable arguments and critique the reasoning of others.
Model with mathematics.
Use appropriate tools strategically.
Attend to precision.
Look for and make use of structure.
Look for and express regularity in repeated reasoning.

WRITING TEAM: April Tharp, Patrick Zapel

WCSD STUDENT DATA SYSTEM INFORMATION

1. Is there a required final examination? _____ X ____ Yes _____ No
2. Does this course issue a mark/grade for the report card? _____ X ____ Yes _____ No
3. Does this course issue a Pass/Fail mark? _____ Y ____ Yes _____ X ____ No
4. Is the course mark/grade part of the GPA calculation? _____ X ____ Yes _____ No
5. Is the course eligible for Honor Roll calculation? _____ X ____ Yes _____ No
6. What is the academic weight of the course?
   _____ No weight/Non credit _____ X ____ Standard weight
   _____ Enhanced weight (Describe)