

WARREN COUNTY SCHOOL DISTRICT
PLANNED INSTRUCTION

COURSE DESCRIPTION

Course Title: Algebra IB

Course Number: _____

Course Prerequisites: This course is designed for the student who has passed Algebra IA with at least a 60%.

Course Description: (Include “no final exam” or “final exam required”)

Algebra IB is the second of the two year Algebra course; continuing the sequence Algebra IA, Algebra IB, and Geometry. In order to take this course, a student must have passed Algebra IA with at least a 60%. This course continues the study of numbers and operations, measurement, algebraic concepts, and data analysis and probability. A final exam is required.

Suggested Grade Level: 10

Length of Course: _____ One Semester X Two Semesters _____ Other
(Describe)

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#) BS/BA Secondary Education/Mathematics

Certification verified by WCSD Human Resources Department:

X Yes _____ No

Board Approved Textbooks, Software, Materials:

Title: Algebra I Classics

Publisher: Prentice Hall

ISBN #:

Copyright Date:

Date of WCSD Board Approval:

BOARD APPROVAL:

Date Written: February 2012

Date Approved: _____

Implementation Year: _____

Suggested Supplemental Materials: (List or insert None) None

Course Standards

PA Academic Standards: (List by Number and Description)

- 2.1.11 Numbers, Number Systems, and Number Relationships
- 2.2.11 Computation and Estimation (Integrated throughout)
- 2.3.11 Measurement and Estimation
- 2.4.11 Mathematical Reasoning and Connection (Integrated throughout)
- 2.5.11 Mathematical Problem Solving and Communication (Integrated throughout)
- 2.6.11 Statistics and Data Analysis
- 2.7.11 Probability and Predictions
- 2.8.11 Algebra and Functions

WCSD Academic Standards: (List or None)

None

Industry or Other Standards: (List, Identify Source or None)

Common Core

Domains:

- The Real Number System
- Quantities
- Seeing Structure and Expressions
- Arithmetic with Polynomials and Rational Expressions
- Creating Equations
- Reasoning with Equations and Inequalities
- Interpreting Functions
- Building Functions
- Linear, Quadratic, and Exponential Models
- Interpreting Categorical and Quantitative Data
- Making Inferences and Justifying Conclusions
- Conditional Probability and the Rules of Probability
- Using Probability to Make Decisions

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**

(List Objectives, PA Standards #'s, Other Standards (see samples at end))

PA Standard: 2.1.11 Numbers, Number Systems, and Number Relationships

	Performance Indicators
M11.A.3.1.1	(Review) Simplify/evaluate expressions using the order of operations to solve problems (any rational numbers may be used).
M11.A.1.1.2	(Review) Express numbers and/or simplify expressions using scientific notation (including numbers less than 1).
M11.A.2.1.1	Solve problems using operations with rational numbers including rates and percents (single and multi-step and multiple procedure operations) (e.g., <u>distance, work and mixture problems,</u> etc.)
M11.A.2.1.2	Solve problems using direct and inverse proportions.

PA Standard: 2.3.11 Measurement and Estimation

	Performance Indicators
M11.B.2.2.4	Find the measurement of a missing length given the perimeter, circumference, area or volume

PA Standard: 2.8.11 Algebra and Functions

	Performance Indicators
A1.1.1.4.1	Use estimation to solve problems.
A1.1.1.1.2	Simplify square roots (e.g., $\sqrt{24} = 2\sqrt{6}$).
A1.1.1.2.1	(Review) Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.
A1.1.1.3.1	(Review) Simplify/evaluate expressions involving properties/laws of exponents, roots and/or absolute value to solve problems (exponents should be integers.)
A1.1.1.5.1	(Review) Add, subtract and/or multiply polynomial expressions (express answers in simplest form – nothing larger than a binomial multiplied by a trinomial).

A1.1.1.5.2	Factor algebraic expressions, including difference of squares and trinomials (trinomials limited to the form ax^2+bx+c where a is equal to 1 after factoring out all monomial factors).
A1.1.1.5.3	Simplify/reduce a rational algebraic expression.
A1.1.2.1.1	Write, solve and/or apply a linear equation (including problem situations).
A1.1.2.1.2	Use and/or identify an algebraic property to justify any step in an equation solving process (linear equations only).
A1.1.2.1.3	Interpret solutions to problems in the context of the problem situation (linear equations only).
A1.1.2.2.1	Write and/or solve a system of linear equations (including problem situations) using graphing, substitution and/or elimination (limit systems to 2 linear equations).
A1.1.2.2.2	Interpret solutions to problems in the context of the problem situation (systems of 2 linear equations only).
A1.1.3.1.1	Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities).
A1.1.3.1.2	(Review) Identify or graph the solution set to a linear inequality on a number line.
A1.1.3.1.3	Interpret solutions to problems in the context of the problem situation (limit to linear inequalities).
A1.1.3.2.1	Write and/or solve a system of linear inequalities using graphing (limit systems to 2 linear inequalities).
A1.1.3.2.2	Interpret solutions to problems in the context of the problem situation (systems of 2 linear inequalities only).

PA Standard: 2.6.11 Statistics and Data Analysis
2.7.11 Probability and Predictions

	Performance Indicators
M11.E.3.1.1	Find probabilities for independent, dependent or compound events and represent as a fraction, decimal or percent).
A1.2.3.3.1	Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal or percent.

M11.E.1.1.1	Create and/or use appropriate graphical representations of data, including box-and-whisker plots, stem-and-leaf plots or scatter plots.
M11.E.2.1.3	Describe how outliers affect measures of central tendency.
A1.2.3.1.1	Calculate and/or interpret the range, quartiles and interquartile range of data.
A1.2.3.2.1	<u>(Review)</u> Estimate or calculate to make predictions based on a circle, line, bar graph, measures of central tendency, or other representations.
A1.2.3.2.2	<u>(Review)</u> Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, <u>scatter plots</u> , measures of central tendency, or other representations).
A1.2.3.2.3	Make predictions using the equations or graphs of best-fit lines of scatter plots.

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

Suggested Assessments (but not limited to):

Observations
Evaluate written work
Performance assessment
Tests
Quizzes
Evaluate oral response
Self-evaluation
Cooperative Learning
Homework
Classroom Diagnostic Tool

Portfolio Assessment: _____ Yes X No

District-wide Final Examination Required: X Yes _____ No

Course Challenge Assessment (Describe):
Not applicable

REQUIRED COURSE SEQUENCE AND TIMELINE

(Content must be tied to objectives)

Content Sequence		Dates
I.	Tools of Algebra	August/September
	a. Order of operations	
	b. Using formulas	
	c. Using algebraic properties	
	d. Simplifying square roots	
II.	Solving linear equations and inequalities	October
	a. Review	
	b. Applications	
III.	Exponents and Polynomials	November
	a. Review laws of exponents	
	b. Operations of polynomials	

IV.	Factoring	December
	a. Greatest common factor	
	b. Trinomials	
	c. Difference of two squares	
V.	Graphs and Forms of Linear Equations	January
	a. Review	
	b. Line of best fit	
VI.	Systems of Equations	February
	a. Graphing	
	b. Substitution	
	c. Elimination	
(Including Applications: mixture, work, motion, consecutive numbers, age, number problems)		
VII.	Inequalities and Absolute Values	March
	a. Compound	
	b. Graphing systems of inequalities	
VIII.	Quadratics	April
	a. Graphing	
	b. Solve by factoring	
IX.	Probability and Statistics	May/June

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: WCSD Math teachers

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? 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)