COURSE: Algebra II

GRADE LEVEL: Tenth, Eleventh and Twelfth Grade

LENGTH OF COURSE: 90 days/semester

TEXT: Algebra 2

PUBLISHER: Prentice Hall Mathematics

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COURSE DESCRIPTION:

Algebra II includes development and application of real number properties, the study of linear open sentences, an introduction to functions, factoring polynomials, the use of rational, irrational and complex numbers, and the study of quadratic equations.

CURRICULUM WRITING TEAM:

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DATE OF REVISION:

2005

Wallenpaupack Area School District

Course: Algebra II

Grade Level: Grade 10, 11, 12

Unit: Data and Linear Representation

PA Standards: 2.1.11.A
2.2.11.A
2.2.11.C
2.3.11.A
2.4.11.B
2.4.11.E
2.5.11.A
2.5.11.B
2.5.11.C
2.7.11.A
2.7.11.B
2.7.11.D
2.8.11.A
2.8.11.D
2.8.11.N
2.8.11.Q

Topics:	**Skills:**
Properties of Real Numbers Algebraic Expressions Solving Equations Solving Inequalities Absolute Value Equations and Inequalities Probability	Graph and order real numbers Identity and use properties or real numbers Evaluate algebraic expressions Simplify algebraic expressions Solve equations Solve problems by writing equations Solve and graph inequalities Solve and write compound inequalities Solve absolute value equations Solve absolute value inequalities Find experimental probabilities Find theoretical probabilities
Activities:	**Performance Assessments:**
Textbook problem solving Partner work Board work Utilize the scientific and graphing calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

Course: Algebra II

Unit: Functions, Equations, and Graphs

Grade Level: Grade 10, 11, 12

PA Standards: 2.1.11.A
2.2.11.A
2.2.11.B
2.2.11.C
2.2.11.F
2.4.11.B
2.4.11.E
2.5.11.A
2.5.11.B
2.5.11.C
2.6.11.B
2.6.11.C
2.6.11.D
2.6.11.F
2.8.11.A
2.8.11.C
2.8.11.D
2.8.11.E
2.8.11.J
2.8.11.K
2.8.11.L
2.8.11.M
2.8.11.N
2.8.11.P
2.8.11.Q
2.8.11.R
2.8.11.S
2.8.11.T
2.9.11.I

Topics:	**Skills:**
Relations and Functions Linear Equations Direct Variation Using Linear Models Absolute Value Functions and Graphs Vertical and Horizontal Translations Two-variable Inequalities	Graph relations Identify functions Graph linear equations Write equations of lines Write a piecewise function Graph a piecewise function Write and interpret direct variation equations Write linear equations that model real-world data Make predictions from linear models Graph absolute value functions

	Skills: (continued)
	Analyze vertical translations Analyze horizontal translations Graph linear inequalities Graph absolute value inequalities
Activities:	**Performance Assessments:**
Textbook problem solving Partner work Board work Utilize the scientific and graphing calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

Course: Algebra II

Unit: Linear Systems

Grade Level: Grade 10, 11, 12

PA Standards: 2.1.11.A
2.2.11.A
2.2.11.B
2.2.11.C
2.2.11.F
2.4.11.B
2.4.11.E
2.5.11.A
2.5.11.B
2.5.11.C
2.8.11.A
2.8.11.D
2.8.11.E
2.8.11.F
2.8.11.G
2.8.11.H
2.8.11.J
2.8.11.K
2.8.11.Q
2.8.11.R
2.8.11.S
2.8.11.T

Topics:	**Skills:**
Graphing Systems of Equations Solving Systems Algebraically Systems of Inequalities Linear Programming Graphs in Three Dimensions Systems with Three Variables	Solve a system by graphing Solve a system by substitution Solve a system by elimination Solve systems of linear inequalities Find maximum and minimum values of linear programming situations Solve problems with linear programming Graph points in three dimensions Graph equations in three dimensions Solve systems in three variables by elimination Solve systems in three variables by substitution
Activities:	**Performance Assessments:**
Textbook problem solving Partner work Board work Utilize the scientific and graphing calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

Course: Algebra II

Unit: Matrices

Grade Level: Grade 10, 11, 12

PA Standards: 2.1.11.A
2.2.11.A
2.2.11.C
2.2.11.F
2.4.11.B
2.4.11.E
2.5.11.A
2.5.11.B
2.5.11.C
2.5.11.D
2.8.11.A
2.8.11.C
2.8.11.D
2.8.11.E
2.8.11.G
2.8.11.H
2.8.11.I
2.8.11.N

Topics:	**Skills:**
Organizing Data into Matrices Adding and Subtracting Matrices Matrix Multiplication Geometric Transformations with Matrices 2x2 Matrices, Determinants, and Inverses 3x3 Matrices, Determinants, and Inverses Inverse Matrices and Systems Augmented Matrices and Systems	Identify matrices and their elements Organize data into matrices Add and subtract matrices Solve matrix equations using addition and subtraction Multiply a matrix by a scalar Multiply two matrices Represent translations and dilations with matrices Represent reflections and rotations with matrices Evaluate determinants of 2x2 matrices Find inverses of 2x matrices Use inverse matrices in solving matrix equations Evaluate determinants of 3x3 matrices Use inverse matrices in solving matrix equations Solve systems of equations using inverse matrices Solve a system of equations using Cramer's Rule Solve a system of equations using augmented matrices

Activities:	**Performance Assessments:**
Textbook problem solving Partner work Board work Utilize the scientific and graphing calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

Course: Algebra II

Grade Level: Grade 10, 11, 12

Unit: Quadratic Equations and Functions

PA Standards:
2.1.11.A
2.2.11.A
2.2.11.B
2.2.11.C
2.2.11.F
2.4.11.B
2.4.11.E
2.5.11.A
2.5.11.B
2.5.11.C
2.5.11.D
2.6.11.B
2.6.11.C
2.8.11.A
2.8.11.B
2.8.11.C
2.8.11.D
2.8.11.E
2.8.11.J
2.8.11.N
2.8.11.O
2.8.11.Q
2.8.11.Q
2.8.11.R
2.8.11.S
2.8.11.T
2.9.11.G
2.9.11.I
2.11.11.A
2.11.11.B

Topics:	**Skills:**
Modeling Data with Quadratic Functions Properties of Parabolas Translating Parabolas Factoring Quadratic Expressions Quadratic Equations Complex Numbers Completing the Square The Quadratic Formula	Identify quadratic functions and graphs Model data with quadratic functions Graph quadratic functions Find maximum and minimum values of quadratic functions Use the vertex form of a quadratic function Factor using greatest common factoring patterns Factor using the difference of squares factoring patterns Factor using the factorable trinomial

	Skills: (continued)
	patterns Solve quadratic equations by factoring Solve quadratic equations by finding square roots Solve quadratic equations by graphing Identify and graph complex numbers Add, subtract, and multiply complex numbers Solve quadratic equations by completing the square Rewrite functions by completing the square Solve quadratic functions by using the Quadratic Formula Determine types of solutions by using the discriminant
Activities:	**Performance Assessments:**
Textbook problem solving Partner work Board work Utilize the scientific and graphing calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

Course: Algebra II

Grade Level: Grade 10, 11, 12

Unit: Polynomials and Polynomial Functions

PA Standards: 2.1.11.A
2.2.11.A
2.2.11.F
2.4.11.B
2.4.11.E
2.5.11.A
2.5.11.B
2.5.11.C
2.8.11.C
2.8.11.D
2.8.11.E
2.8.11.J
2.8.11.N
2.8.11.Q
2.8.11.R
2.8.11.S
2.8.11.T
2.9.11.I

Topics:	**Skills:**
Polynomial Functions Polynomials and Linear Factors Dividing Polynomials Solving Polynomial Equations	Classify polynomials Model data using polynomial functions Analyze the factored form of a polynomial Write a polynomial function from its zeros Divide polynomials using long division Divide polynomials using synthetic division Solve polynomial equations by graphing Factoring polynomials using the sum and difference of cubes factoring pattern Solve polynomial equations by factoring
Activities:	**Performance Assessments:**
Textbook problem solving Partner work Board work Utilize the scientific and graphing calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework

Course: Algebra II

Grade Level: Grade 10, 11, 12

Unit: Radical Functions and Rational Exponents

PA Standards: 2.1.11.A
2.2.11.A
2.2.11.F
2.4.11.B
2.4.11.E
2.5.11.A
2.5.11.B
2.5.11.C
2.8.11.A
2.8.11.C
2.8.11.D
2.8.11.E
2.8.11.J
2.8.11.O
2.8.11.Q
2.8.11.R
2.8.11.S
2.8.11.T
2.9.11.I

Topics:	**Skills:**
Roots and Radical Expressions Multiplying and Dividing Rational Expressions Binomial Radical Expressions Rational exponents Solving Radical Equations Function Operations Inverse Relations and Functions Graphing Radical Functions	Simplify nth roots Multiply radical expressions Divide radical expressions Add and subtract radical expressions Multiply and divide binomial expressions Simplify expressions with rational exponents Solve radical equations Add, subtract, multiply and divide functions Find the composite of two functions Find the inverse of a relation or function Graph radical functions
Activities:	**Performance Assessments:**
Textbook problem solving Partner work Board work Utilize the scientific and graphing calculator	Teacher produced tests and quizzes Class assignments Class participation Teacher observation Board work Homework