

Wilson Area School District Planned Course Guide

Title of planned course: Applied Algebra I Part 2

Subject Area: Mathematics

Grade Level: 9

Course Description: *Prerequisites: Applied Algebra I Part 1.* The course is the study of systems of equations and inequalities, exponents and exponential functions, polynomials and factoring, rational functions, and probability. Applications of real-world problems will be emphasized. (Course requirements include: tests, quizzes, projects, presentations, notebook, daily homework, and usage of calculators.) It is highly recommended that each student have a calculator. The pacing of this course will provide time to review and cement foundational skills. The algebraic concepts presented will be spiraled throughout the course.

Time/Credit for this Course: Full year / 1 credit

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**Wilson Area School District
Planned Course Materials**

Course Title: Applied Algebra I Part 2

Textbook: Algebra I Holt, McDougal © 2012

Supplemental Books: Unified Mathematics Books 1-3, Gerald R. Rising, et. al.
Algebra I Holt, Rinehart, and Winston © 2003
www.hrw.com

Teacher Resources:

- Textbooks
- Worksheets
- Internet
- Teacher created worksheets
- Teacher One Stop (included with textbook)
- Smartboard

Curriculum Map

August: Part 1 Review 10 – 15 days

September: Part 1 Review 10 – 15 days (Cont)
Systems of Inequalities (Unit 5) 16 – 23 days

October: Systems of Inequalities (Unit 5) 16 – 23 days

November: Exponents and Polynomials (Unit 6) 32 – 39 days

December: Exponents and Polynomials (Unit 6) 32 – 39 days (Cont.)

January: Factoring Polynomials (Unit 7) 19 – 31 days

February: Factoring Polynomials (Unit 7) 19 – 31 days (Cont.)

March: Data Analysis and Probability (Unit 8) 23 – 30 days

April: Data Analysis and Probability (Unit 8) 23 – 30 days (Cont.)
Keystone Preparation

May/June: Keystone Preparation and Testing
Selected Algebraic Applications 7 – 10 days
Final Exam

Curriculum Scope & Sequence

Planned Course: Applied Algebra I Part 2

Unit 5: Systems of Equations and Inequalities

Time frame: 16 – 23 class periods

Keystone Standards: A1.1.2.2.1, A1.1.3.2

Anchor(s) or adopted anchor: M11.D.2.1.2, M11.D.2.1.4

Essential content/objectives: At end of the unit, students will be able to:

- Identify solutions of systems of linear equations in two variables
- Compare, choose, and use an appropriate method for solving systems of linear equations
- Graph and solve linear inequalities in two variables
- Graph and solve systems of linear inequalities in two variables

Core Activities: Students will complete/participate in the following:

- Define and apply key terms relating to Algebra
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Solve problems with an emphasis on real world applications

Extensions:

- System of equations in three variables

Remediation:

- Use of technology to assist in graphing solutions
- Chapter review exercises that revisit concepts and vocabulary
- Teacher/peer tutoring
- Mathlab assignment
- Study island

Instructional Methods:

- Explicit instruction
- Teacher directed examples and applications
- Warm ups
- Individual, pair, and whole group practice
- Higher ordering questioning

Materials & Resources:

- Warm Ups
- Textbook
- Overhead
- Teacher directed examples
- Handouts (worksheets)
- Calculators

Assessments:

- Warm Ups
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques

Curriculum Scope & Sequence

Planned Course: Applied Algebra I Part 2

Unit 6: Exponents and Polynomials

Time frame: 32 – 39 class periods

Keystone Standards: A1.1.1.1.2, A1.1.1.3.1, A1.1.1.5.1

Anchor(s) or adopted anchor: M11.A.2.2.1, M11.A.2.2.2, M11.D.2.2.1

Essential content/objectives: At end of the unit, students will be able to:

- Simplify expressions utilizing the rules of exponents
- Evaluate expressions containing zero and integer exponents
- Simplify expressions containing zero and integer exponents
- Simplify expressions containing square roots
- Evaluate and simplify expressions containing rational exponents
- Classify polynomials and write polynomials in standard form
- Evaluate polynomial expressions
- Add, subtract, and multiply polynomials
- Find special products of binomials

Core Activities: Students will complete/participate in the following:

- Define and apply key terms relating to Algebra
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Compare linear and exponential models to discover importance
- Geometry connections with polynomials (perimeter and area)

Extensions:

- Work with problems involving more variables and fractions within fractions
- Real world applications

Remediation:

- Break types of problems into sections according to what type they are
- Chapter review exercises that revisit concepts and vocabulary
- Teacher/peer tutoring
- Mathlab assignment
- Study island

Instructional Methods:

- Explicit instruction
- Overhead notes
- Warm ups
- Higher order thinking questions
- Individual, pair, and small group practice
- Partner project

Materials & Resources:

- Warm Ups
- Textbook
- Overhead
- Teacher directed examples
- Handouts (worksheets)
- Calculators

Assessments:

- Warm Ups
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques

Curriculum Scope & Sequence

Planned Course: Applied Algebra I Part 2

Unit 7: Factoring Polynomials

Time frame: 19 – 31 class periods

Keystone Standards: A1.1.1.2.1, A1.1.1.5.2, A1.1.1.5.3

Anchor(s) or adopted anchor: M11.A.1.2.1, M11.D.2.2.2, M11.D.2.2.3

Essential content/objectives: At end of the unit, students will be able to:

- Write the prime factorization of numbers
- Find the greatest common factor (GCF) of monomials
- Factor polynomials by using the greatest common factor
- Factor quadratic trinomials of the form $x^2 + bx + c$
- Factor perfect-square trinomials
- Factor the difference of two squares.
- Choose an appropriate method for factoring a polynomial
- Combine methods for factoring a polynomial
- Simplify and/or reduce a rational algebraic expression

Core Activities: Students will complete/participate in the following:

- Define and apply key terms relating to Algebra
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Develop a flow chart process of how to factor monomials and polynomials
- Complete multi-step problems with real world applications

Extensions:

- Factor problems where the leading coefficient is not one
- Solve real world problems using factoring techniques

Remediation:

- Review of when to apply different techniques based on the appearance of the polynomial
- Chapter review exercises that revisit concepts and vocabulary
- Teacher/peer tutoring
- Mathlab assignment
- Study island

Instructional Methods:

- Explicit instruction
- Overhead notes
- Warm ups
- Higher order thinking questions
- Individual, pair, and small group practice

Materials & Resources:

- Warm Ups
- Textbook
- Overhead
- Teacher directed examples
- Handouts (worksheets)
- Calculators

Assessments:

- Warm Ups
- Teacher observation of student work
- Homework assignments
- Test/quizzes

Curriculum Scope & Sequence

Planned Course: Applied Algebra I Part 2

Unit 8: Data Analysis and Probability

Time frame: 23 – 30 class periods

Keystone Standards: A1.2.3.2.1, A1.2.3.1, A1.2.3.2.2, A1.2.3.3.1

Anchor(s) or adopted anchor: M11.E.1.1.1, M11.E.1.1.2, M11.E.2.1.1, M11.E.2.1.2, M11.E.3.1.1, M11.E.3.1.2, M11.E.4.1.2

Essential content/objectives: At end of the unit, students will be able to:

- Choose a table or a graph to organize/display data
- Create and interpret stem-and-leaf plots
- Create and interpret frequency tables and histograms
- Describe the central tendency of a data set
- Create and interpret box-and-whisker plots
- Recognize misleading graphs and statistics
- Determine the experimental probability of an event
- Use experimental probability to make predictions
- Determine the theoretical probability of an event
- Convert between probabilities and odds
- Find the probability of independent and dependent events

Core Activities: Students will complete/participate in the following:

- Define and apply key terms relating to Algebra
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Hands on experiments to compare theoretical and experimental probabilities

Extensions:

- Design and present their own probability experiments. Compare their experiments with the theoretical probability of the event
- Solve problems with real world applications

Remediation:

- Chapter review exercises that revisit concepts and vocabulary
- Teacher/peer tutoring
- Mathlab assignment
- Study island

Instructional Methods:

- Explicit instruction
- Overhead notes
- Warm ups
- Higher order thinking questions
- Individual, pair, and small group practice
- Group experiments

Materials & Resources:

- Warm Ups
- Textbook
- Overhead
- Teacher directed examples
- Handouts (worksheets)
- Calculators
- Activity supplies

Assessments:

- Warm Ups
- Teacher observation of student work
- Homework assignments
- Test/quizzes
- Questioning techniques
- Observation of experiments