

Wilson Area School District Planned Course Guide

Title of planned course: Applied Algebra I Part 1

Subject Area: Mathematics

Grade Level: 9

Course Description: *Prerequisites: Pre-Algebra.* The course is the study of patterns in Algebra, operations in Algebra, writing and solving equations, inequalities, and absolute value functions, proportional reasoning, linear functions, and systems of equations. 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 fundamental skills and spiral the algebraic concepts learned.

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 1

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: Equations (Unit 1) 32 – 39 days

September: Equations (Unit 1) 32 – 39 days (Cont.)

October: Equations (Unit 1) 32 – 39 days (Cont.)

November: Inequalities (Unit 2) 20 – 27 days

December: Inequalities (Unit 2) 20 – 27 days (Cont.)

January: Functions (Unit 3) 22 – 29 days

February: Functions (Unit 3) 22 – 29 days

March: Linear Functions (Unit 4) 33 – 45 days

April: Linear Functions (Unit 4) 33 – 45 days (Cont.)

May/June: Systems of Equations (Unit 5) 16 – 22 days

Curriculum Scope & Sequence

Planned Course: Applied Algebra I Part 1

Unit 1: Equations

Time frame: 32 – 39 class periods

Keystone Standards: A1.1.1.3.1, A1.1.2.1.1, A1.1.2.1.2

Anchor(s) or adopted anchor: M11.A.1.3.1, M11.A.1.3.2, M11.A.3.1.1, M11.A.3.2.1, M11.D.1.1.1

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

- Identify rational and irrational expressions and compare their values
- Translate between words and algebra
- Evaluate algebraic expressions
- Solve one-step equations in one variable by using addition, subtraction, multiplication, or division
- Solve equations in one variable that contain more than one operation
- Solve equations in one variable that contain variable terms on both sides
- Solve a formula for a given variable
- Solve an equation in two or more variables for one of the variables
- Solve equations in one variable that contain absolute-value expressions
- Analyze and compare measurements for precision and accuracy and choose an appropriate level of accuracy when reporting measurements

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
- Create visual representation in the form of a mobile on balance equations
- Applying equations to geometry problems with perimeter and area

Extensions:

- Work with more challenging patterns and problems
- Real world applications

Remediation:

- Additional exercises with scaffold support
- Less complex numbers to work with to build prior knowledge
- Chapter review exercises that revisit concepts and vocabulary
- Teacher/peer tutoring
- Mathlab assignment
- Study island

Instructional Methods:

- Explicit instruction
- Overhead notes
- Higher order thinking questions
- Individual, pair, and small group practice
- Power point presentations
- Warm ups
- Teacher directed examples and applications

Materials & Resources:

- Warm Ups
- Textbook
- Overhead
- Notes/examples
- Handouts (worksheets)
- Activity supplies
- Calculators

Assessments:

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

Curriculum Scope & Sequence

Planned Course: Applied Algebra I Part 1

Unit 2: Inequalities

Time frame: 20 – 27 class periods

Keystone Standards: A1.1.3.1

Anchor(s) or adopted anchor: M11.D.2.1.1

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

- Identify solutions of inequalities in one variable
- Write and graph inequalities in one variable
- Solve one-step inequalities by using addition, subtraction, multiplication, and division
- Solve inequalities that contain more than one operation
- Solve inequalities that contain variable terms on both sides of the inequality
- Solve and graph compound inequalities in one variable
- Solve inequalities in one variable involving absolute-value expressions

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

- Define key terms relating to Algebra
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Use visual aids to assist in learning
- Truth tables and compound statements activity

Extensions:

- Solve inequalities that contain multiple operations and absolute-value expressions
- Real world applications

Remediation:

- Additional exercises with scaffold support
- Use more technology to assist in operations with numbers
- Chapter review exercises that revisit concepts and vocabulary
- Teacher/peer tutoring
- Mathlab assignment
- Study island

Instructional Methods:

- Explicit instruction
- Teacher directed examples and applications
- Overhead notes
- Higher order thinking questions
- Individual, pair, and whole group practice
- Calculator instruction
- Power point presentations
- Warm ups

Materials & Resources:

- Warm Ups
- Textbook
- Overhead
- Notes
- 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 1

Unit 3: Functions

Time frame: 22 – 29 class periods

Keystone Standards: A1.1.2.1.1, A1.2.1.1, A1.2.1.1.2, A1.2.1.1.3

Anchor(s) or adopted anchor: M11.A.3.2.1, M11.D.1.1.2, M11.D.1.1.3, M11.D.2.1.2, M11.D.2.1.3, M11.D.3.1.1, M11.D.4.1.1, M11.E.4.2.2

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

- Match simple graphs with situations
- Graph a relationship
- Identify functions and find the domain and range of relations and functions
- Identify independent and dependent variables
- Write an equation in function notation and evaluate a function for given input values
- Graph functions given a limited domain or a domain of all real numbers
- Create and interpret scatter plots and use trend lines to make predictions
- Recognize and extend an arithmetic sequence to find a given

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
- Participate in a physical activity to help with concepts of relations and functions
- Use student gathered data to create and interpret graphs

Extensions:

- Work with problems that have fractional and decimal values
- Real world applications

Remediation:

- Additional exercises with scaffold support
- Break problems into smaller sections
- Give more instructions on what process to use for particular problems
- Chapter review exercises which revisits 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
- Teacher directed physical activity

Materials & Resources:

- Warm Ups
- Textbook
- Overhead
- Teacher directed notes
- Handouts (worksheets)
- Calculators
- Project supplies

Assessments:

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

Curriculum Scope & Sequence

Planned Course: Applied Algebra I Part 1

Unit 4: Linear Functions

Time frame: 33 – 45 class periods

Keystone Standards: A1.2.1.1, A1.2.1.2, A1.2.2.1, A1.2.2.2.1, A1.2.3.2.3

Anchor(s) or adopted anchor: M11.A.2.1.2, M11.C.3.1.2, M11.D.1.1.2, M11.D.1.1.3, M11D.3.2, M11.D.4.1.1, M11.E.4.2

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

- Identify linear functions and linear equations
- Graph linear functions that represent real-world situations and give their domain and range
- Find x- and y-intercepts and interpret their meaning in real-world situations
- Use x- and y-intercepts to graph lines
- Find rates of change and slope and relate a constant rate of change to the slope of a line
- Find slope by using the slope formula
- Identify, write, and graph direct variation
- Write and graph a linear equation in slope-intercept form
- Graph a line and write a linear equation using point-slope form given a slope and a point or two points
- Determine a line of best fit for a set of linear data
- Determine and interpret the correlation coefficient
- Identify and graph parallel and perpendicular lines
- Write equations to describe lines parallel or perpendicular to a given line

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
- Participate in a physical activity to help with concepts of slope and line of best fit
- Cooperative learning activity – rolling number cubes to create ordered pairs and find the slope
- Matching graphs to equations activity

Extensions:

- Research and present data in data displays
- Create and solve more challenging problems involving proportion and percent
- Real world applications

Remediation:

- Use more technology to assist in representing data and calculating
- 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
- Teacher directed physical activity

Materials & Resources:

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

Assessments:

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

Curriculum Scope & Sequence

Planned Course: Applied Algebra I Part 1

Unit 5: Systems of Equations and Inequalities

Time frame: 16 – 22 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
- Solve systems of linear equations in two variables by graphing
- Solve systems of linear equations in two variables by substitution
- Solve systems of linear equations in two variables by elimination
- Compare and choose an appropriate method for solving systems of linear equations
- Solve special systems of linear equations in two variables
- Classify systems of linear equations and determine the number of solutions

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 which revisits 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