

Wilson Area School District Planned Course Guide

Title of planned course: Keystone Algebra 1 Remediation

Subject Area: Mathematics

Grade Level: 9 – 11

Course Description: This course is required for students who were not proficient on the end of course Keystone Algebra 1 state assessment. Study of Algebra 1 concepts will be reviewed to develop a stronger foundation of the fundamentals in order to be eligible to retake the Keystone.

Time/Credit for this Course: Half year / 0.4 credit

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Curriculum Map

Fall Course:

August:

Equations (Unit 1) 9 – 12 days

September:

Equations (Unit 1) 9 – 12 days (Cont.)

Inequalities (Unit 2) 7 – 10 days

October:

Functions (Unit 3) 6 – 9 days

Linear Functions (Unit 4) 10 – 13 days

November:

Systems of Equations and Inequalities (Unit 5) 8 – 11 days

Exponents and Polynomials (Unit 6) 10 – 12 days

December:

Factoring Polynomials (Unit 7) 8 – 11 days

Data Analysis and Probability (Unit 8) 7 – 9 days

January:

Data Analysis and Probability (Unit 8) 7 – 9 days (Cont.)

Keystone Test Prep/Review 5 – 8 days

Spring Course:

January:

Equations (Unit 1) 9 – 12 days

February:

Inequalities (Unit 2) 7 – 10 days

Functions (Unit 3) 6 – 9 days

Linear Functions (Unit 4) 10 – 13 days

March:

Linear Functions (Unit 4) 10 – 13 days (Cont.)

Systems of Equations and Inequalities (Unit 5) 8 – 11 days

April:

Exponents and Polynomials (Unit 6) 10 – 12 days

Data Analysis and Probability (Unit 8) 7 – 9 days

May/June:

Data Analysis and Probability (Unit 8) 7 – 9 days (Cont.)

Keystone Test Prep/Review 5 – 8 days

Wilson Area School District Planned Course Materials

Course Title: Keystone Algebra I Remediation

Textbook:

Common Core Coach Algebra 1, 1st Edition
Triumph Learning © 2014

Supplemental Books:

- Skills Coach, Algebra I: Streamline to Proficiency – Linear Functions
Triumph Learning © 2005
- Skills Coach, Algebra I: Streamline to Proficiency – Quadratic Functions
Triumph Learning © 2005
- Skills Coach, Algebra I: Streamline to Proficiency – Linear Equations and Inequalities
Triumph Learning © 2005
- Skills Coach, Algebra I: Streamline to Proficiency – Polynomials
Triumph Learning © 2005

Teacher Resources:

- Textbooks
- Worksheets
- Internet
- Teacher created worksheets
- Common Core Coach Algebra 1 – Teacher's Edition
- Smartboard

Curriculum Scope & Sequence

Planned Course: Keystone Algebra 1 Remediation

Unit 1: Equations

Time frame: 9 – 12 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 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.

Extensions:

- Work with more challenging patterns and problems.

Remediation:

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

Instructional Methods:

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

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
- Higher order questioning

Curriculum Scope & Sequence

Planned Course: Keystone Algebra 1 Remediation

Unit 2: Inequalities

Time frame: 7 – 10 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.

Extensions:

- Solve inequalities that contain multiple operations and absolute-value expressions.

Remediation:

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

Instructional Methods:

- Teacher directed examples
- 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: Keystone Algebra 1 Remediation

Unit 3: Functions

Time frame: 6 – 8 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 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.

Extensions:

- Work with problems that have fractional and decimal values.

Remediation:

- Additional exercises.
- 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:

- 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: Keystone Algebra 1 Remediation

Unit 4: Linear Functions

Time frame: 10 – 13 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 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.

Extensions:

- Research and present data in some of these data displays.
- Create and solve more challenging problems involving proportion and percent.

Remediation:

- Use more technology to assist in representing data and calculating.
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Mathlab assignment
- Study island

Instructional Methods:

- 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: Keystone Algebra 1 Remediation

Unit 5: Systems of Equations and Inequalities

Time frame: 8 – 11 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.
- 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 key terms relating to Algebra.
- Complete examples of problems in class.
- Participate in individual, pair, and small group practice of concepts.

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:

- Teacher directed examples
- 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: Keystone Algebra 1 Remediation

Unit 6: Exponents and Polynomials

Time frame: 10 – 11 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 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.

Extensions:

- Work with problems involving more variables and fractions within fractions.

Remediation:

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

Instructional Methods:

- 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: Keystone Algebra 1 Remediation

Unit 7: Factoring Polynomials

Time frame: 8 – 11 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 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.

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 which revisits concepts and vocabulary
- Teacher/peer tutoring
- Mathlab assignment
- Study island

Instructional Methods:

- 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: Keystone Algebra 1 Remediation

Unit 8: Data Analysis and Probability

Time frame: 7 – 9 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 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.

Remediation:

- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Mathlab assignment
- Study island

Instructional Methods:

- 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