

Wilson Area School District Planned Course Guide

Title of planned course: Algebra I

Subject Area: Mathematics

Grade Level: 7 and 8

Course Description: *Prerequisites: Pre-Algebra.* The course is the study of patterns in Algebra, operations in Algebra, writing and solving equations, proportional reasoning, statistics, linear functions, inequalities and absolute value, systems of equations, exponents and exponential functions, polynomials and factoring, rational functions, and probability. Applications of real-world problems will be included. (Course requirements include: tests, quizzes, projects, presentations, notebook, daily homework, and usage of calculators.) It is highly recommended that each student have a calculator.

Time/Credit for this Course: One Full Academic Year / 1 Credit

Curriculum Writing Committee: Julia Morrissey

Curriculum Map

August / September: Basic operations and Fractions (Unit 1)

September: Linear Functions and their Graphs (Unit 2)

October: Solving Equations (Unit 3)

November: Non-Linear Functions (Unit 4)
Exponents and Polynomials (Unit 5)

December: Systems of Linear equations (Unit 6)

January: Solving Inequalities (Unit 7)

February: Data Analysis and Probability (Unit 8)

March: Systems of linear Inequalities and Systems applications (Unit 9)
Transformations (8th grade Unit 10)
Angle Relationships and Triangles (7th grade Unit 10)

April: Factoring Polynomials (Unit 11)

May/June: Domain and Range (Unit 12)

Wilson Area School District Planned Course Materials

Course Title: Algebra I

Textbook: (Reveal) Algebra I
McGraw Hill © 2020

Supplemental Books: Algebra I
Holt, McDougal © 2012

Teacher Resources:

- Textbooks
- Worksheets from book
- Teacher created worksheets
- Online Activities (edpuzzle, quizizz, quia, etc.)
- Digital Activities (pixel art, mazes, escape rooms, etc.)
- Google Classroom
- Calculators
- <https://my.mheducation.com/login>
- www.khanacademy.org
- <http://www.mobymax.com/PA6068>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 1: Basic Operations and Fractions

Time frame: 2 weeks

Keystone Standards: A1.1.1.1.1, A1.1.1.3.1, A1.1.1.4.1

State Standards: CC.2.1.8.E.1, CC.2.1.8.E.4, CC.2.1.HS.F.2, CC.2.2.7.B.3

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

- Identify rational numbers and compare their values
- Create, Read, or Interpret Number lines
- Evaluate mathematical expressions
- Order of operations
- Convert a terminating or repeating decimal to a fraction
- Write numbers in scientific notation
- Add and subtract numbers written in scientific notation
- Use formulas to calculate the volumes of cones, cylinders, and spheres (8th grade)
- Use formulas to calculate the area, circumference, volume, and surface area of 2D and 3D objects (7th grade)

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

- Module 1: Expressions (student workbook pgs 3-48, 59-62)
 - Lesson 1: Evaluate numerical expressions using the order of operations
 - Explore Order of Operations activity
 - Include expressions that contain absolute value bars (pgs 45-48)
 - Lesson 2: Evaluate algebraic expressions
 - Include formulas to calculate volume, area, circumference, etc
 - Graph solutions on a number line
 - Lesson 3: Apply the properties of real numbers to simplify expressions
 - Use the digital lesson, Expand 1-3
- Module Extension: Scientific Notation
 - Lesson 1: Write numbers in scientific notation and standard form
 - Use both positive and negative exponents
 - Lesson 2: Add and subtract numbers written in scientific notation
 - Use calculators to check answers

Extensions:

- Placing rational numbers on number lines (Comparing values)

Remediation:

- Integration of manipulatives (use of rectangles to model distributive property, use of number lines both marked and unmarked)
- Use mathgames.com to identify rational and irrational numbers
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Mimio Lessons
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 2: Linear Functions

Time frame: 4 weeks

Keystone Standards: A1.2.1.1.1, A1.2.1.1.2, A1.2.1.1.3, A1.2.1.2.1, A1.2.1.2.2, A1.2.2.1.1, A1.2.2.1.2, A1.2.2.1.3, A1.2.2.1.4, A1.2.2.2.1, A1.2.3.2.3

State Standards: CC.2.2.8.C.1, CC.2.2.8.C.2, CC.2.2.HS.C.1, CC.2.2.HS.C.2, CC.2.2.HS.C.3, CC.2.4.HS.B.2, CC.2.1.HS.F.3, CC.2.1.HS.F.4, CC.2.2.8.B.2, CC.2.2.HS.C.4, CC.2.2.HS.C.6,

Essential content/objectives: At the 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
- Compare two different proportional relationships represented in different ways
- Determine a line of best fit for a set of linear data
- 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:

- Module 3: Relations and Functions
 - Lesson 1: Representing Relations
 - Represent relations in four different ways
 - Interpret graphs of relations.
 - Lesson 3: Identify Linearity and Continuity of graphs.
 - Determine whether functions are continuous, discrete, or neither
 - Determine whether functions are linear or nonlinear
 - Lesson 4: Intercepts of Graphs
 - Identify the intercepts of functions and intervals where functions are positive and negative
 - Solve equations by graphing
 - Include real-world situations in Lesson 6
- Module 4: Linear and Nonlinear Functions
 - Lesson 1: Graphing Linear Functions
 - Graph linear functions by making tables of values
 - Graph linear functions by using the x- and y-intercepts
 - Lesson 2: Rate of Change and Slope

- Calculate and interpret the rate of change
- Calculate and interpret slope using rise over run and the slope formula
- Module 5: Creating Linear Equations
 - Lesson 1: Writing Equations in Slope-Intercept Form
 - Write an equation of a line in slope-intercept form given the slope and one point
 - Write an equation of a line in slope-intercept form given two points
 - Compare two different proportional relationships represented in different ways
 - Lesson 2: Writing Equations in Standard and Point-Slope Forms
 - Write equations of lines in point-slope form
 - Create and identify equations of parallel or perpendicular lines

Extensions:

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

Remediation:

- Create and use flashcards to master vocabulary
- Use desmos to practice identifying the “line of best fit”, parallel lines, and perpendicular lines
- Additional small group instruction
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**

- End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 3: Solving Equations

Time frame: 4 weeks

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

State Standards: CC.2.1.HS.F.1, CC.2.1.HS.F.2, CC.2.2.8.B.3, CC.2.2.8.C.1, CC.2.2.8.C.2, CC.2.2.HS.D.8, CC.2.2.HS.D.9, CC.2.2.HS.D.10

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

- Translate between words and algebra
- Evaluate algebraic expressions
- Solve equations in one variable that contain one or more than one operation
- Solve equations in one variable that contain variable terms on both sides
- Solve a formula for a given variable
- Use the pythagorean theorem to determine if a triangle is right
- Use the pythagorean theorem to determine unknown side lengths in right triangles
- Solve an equation in two or more variables for one of the variables
- Solve equations in one variable that contain absolute-value expressions
- Use and/or identify an algebraic property to justify any step in the equation solving process
- Write and identify linear equations in one variable with one solution, infinitely many solutions, or no solutions

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

- Module 2: Equations in One Variable
 - Lesson 1: Writing and Interpreting Equations
 - Translate sentences into equations
 - Translate equations into sentences
 - Lesson 3: Solving Multi-Step Equations
 - Solve equations involving two steps
 - Solve equations involving multi-steps
 - Lesson 4: Solving Equations with the Variable on Each Side
 - Solve equations with the variable on each side
 - Prove that equations are identities, have infinitely many solutions, or no solutions
 - Lesson 5: Solving Equations Involving Absolute Value
 - Solve absolute value equations
 - Lesson 6: Solving Proportions
 - Solve proportions by cross multiplying
 - Lesson 7: Using Formulas
 - Solve equations for specific variables
 - Use the pythagorean theorem to determine if a triangle is right
 - Use the pythagorean theorem to find unknown side lengths of right triangles

Extensions:

- Work with more challenging patterns and problems

Remediation:

- Have students create “done and to-do” lists
- mathgames.com assignments on pythagorean theorem
- Additional small group instruction
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 4: Non-Linear Functions

Time frame: 3 weeks

Keystone Standards: A1.1.2.1.1, A1.2.1.1.1, A1.2.1.1.2, A1.2.1.1.3

Anchor(s) or adopted anchor: CC.2.2.8.B.3, CC.2.2.8.C.1, CC.2.2.8.C.2, CC.2.2.HS.C.1, CC.2.2.HS.C.2, CC.2.2.HS.C.3, CC.2.4.HS.B.2

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

- Match simple graphs with situations
- Graph a relationship
- Identify relations and functions
- Identify independent and dependent variables
- Write an equation in function notation and evaluate a function for given input values
- Create and interpret scatter plots and use trend lines to make predictions

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

- Module 3: Relations and Functions
 - Lesson 1: Representing Relations
 - Graph a relationship between two variables
 - Analyze graphs of relations
 - Lesson 2: Functions
 - Determine whether relations are functions
 - Evaluate functions in function notation for given values
- Module 5: Creating Linear Equations
 - Lesson 3: Scatter Plots and Lines of Fit
 - Categorize the correlation of a set of data in a scatter plot
 - Make and evaluate predictions by fitting linear functions to sets of data

Extensions:

- Work with problems that have fractional and decimal values
- Recognize and extend an arithmetic sequence to find a given term

Remediation:

- Graphing Stories practice
(<https://www.stem.org.uk/resources/collection/425087/graphing-stories>)
- MobyMax assignments:
 - Determine if the relation is a function from a data table, on a graph, and from points
 - Use a function rule to determine outputs from an input Parts 1, 2, and 3
 - Calculate functions Part 1 and 2
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions

- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 5: Exponents and Polynomials

Time frame: 4 weeks

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

Anchor(s) or adopted anchor: CC.2.1.HS.F.1, CC.2.1.HS.F.2, CC.2.2.8.B.1, CC.2.2.HS.D.1, CC.2.2.HS.D.2, CC.2.2.HS.D.3, CC.2.2.HS.D.5,

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

- Simplify expressions utilizing the rules of exponents
- Multiply and divide numbers in scientific notation
- Evaluate expressions containing zero and integer exponents
- Simplify expressions containing zero and integer exponents
- Write the prime factorization of numbers
- 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:

- Module 8: Exponents and Roots
 - Lesson 1: Multiplication Properties of Exponents
 - Find products of monomials
 - Find the power of a power
 - Find the power of a product
 - Lesson 2: Division Properties of Exponents
 - Find quotients of monomials
 - Find powers of quotients
 - Lesson 3: Negative Exponents
 - Simplify expressions containing zero and negative exponents
 - Simplify expressions containing negative exponents
 - Lesson 4: Rational Exponents
 - Rewrite expressions involving n th roots and rational exponent.
 - Rewrite expressions involving powers of n th roots and rational exponents
 - Lesson 5: Simplifying Radical Expressions
 - Simplify square roots
 - Simplify cube roots
- Module 10: Polynomials
 - Lesson 1: Adding and Subtracting polynomials
 - Identify and write polynomials by using the standard form
 - Evaluate polynomials
 - Add polynomials
 - Subtract polynomials

- Lesson 2: Multiply Polynomials by Monomials
 - Multiply polynomials by monomials
- Lesson 3: Multiply Polynomials
 - Multiply binomials by using the Distributive Property and the FOIL Method
- Lesson 4: Special Products
 - Multiply binomials by applying the pattern formed by squares of sums
 - Multiply binomials by applying the pattern formed by squares of differences

Extensions:

- Work with problems involving more variables and fractions within fractions

Remediation:

- Create and use flashcards to master the exponent rules
- Mathgames.com assignments with exponents
- Additional small group instruction
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 6: Systems of Equations

Time frame: 3 weeks

Keystone Standards: A1.1.2.2.1, A1.1.2.2.2

Anchor(s) or adopted anchor: CC.2.2.8.B.3, CC.2.2.HS.D.7, CC.2.2.HS.D.10,

Essential content/objectives: At the 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
- Use the pythagorean theorem to find the distance between two points

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

- Module 7: Systems of Linear Equations and Inequalities
 - Lesson 1: Graphing Systems of Equations
 - Determine the number of solutions of a system of linear equations
 - Solve systems of equations by graphing
 - Solve linear equations by graphing systems of equations
 - Use the pythagorean theorem to find the distance between points
 - Lesson 2: Substitution
 - Solve systems of equations by using the substitution method
 - Lesson 3: Elimination Using Addition and Subtraction
 - Solve systems of equations by eliminating a variable using addition
 - Solve systems of equations by eliminating a variable using subtraction
 - Lesson 4: Elimination Using Multiplication
 - Solve systems of equations by eliminating a variable using multiplication and addition

Extensions:

- System of linear equations in three variables
- Systems of linear equations in two variables with more than two equations
- Systems of linear and nonlinear equations by graphing

Remediation:

- Use desmos.com to check answers.
- Emoji (picture) logic puzzles.
- Create and use systems of linear equations interactive notebook pages
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 7: Inequalities

Time frame: 3 weeks

Keystone Standards: A1.1.3.1.1, A1.1.3.1.2, A1.1.3.1.3, A1.1.2.1.1, A1.1.2.1.2

Anchor(s) or adopted anchor: CC.2.2.HS.D.7, CC.2.2.HS.D.9, CC.2.2.HS.D.10, CC.2.2.HS.C.3

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

- Identify solutions of inequalities in one variable
- Identify solutions of equations in one variable
- Write and graph inequalities in one variable
- Solve inequalities that contain one or more than one operation
- Solve inequalities that contain variable terms on both sides of the inequality
- Solve and graph compound inequalities in one variable

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

- Module 6: Linear Inequalities
 - Lesson 1: Solving One-Step Inequalities
 - Graph the solutions of an inequality
 - Write and solve linear inequalities
 - Lesson 2: Solving Multi-Step Inequalities
 - Write and solve multi-step inequalities
 - Lesson 3: Solving Compound Inequalities
 - Solve and graph linear inequalities containing the word *and*
 - Solve and graph linear inequalities containing the word *or*
 - Lesson 4: Solving Absolute Value Inequalities
 - Solve absolute value inequalities ($<$)
 - Solve absolute value inequalities ($>$)

Extensions:

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

Remediation:

- Have students create “done and to-do” lists
- Create and play Equation and Inequality Memory
- Additional small group instruction
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 8: Data Analysis and Probability

Time frame: 3 weeks

Keystone Standards: A1.2.3.2.1, A1.2.3.1.1, A1.2.3.2.2, A1.2.3.3.1

Anchor(s) or adopted anchor: CC.2.4.HS.B.1, CC.2.4.HS.B.3, CC.2.4.HS.B.5, CC.2.4.7.B.3, CC.2.4.HS.B.4, CC.2.4.HS.B.7

Essential content/objectives: At the 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
- Find the probability of independent and dependent events
- Represent the pattern in a set of data algebraically or graphically

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

- Module 12: Statistics
 - Lesson 1: Measures of Center
 - Represent sets of data by using measures of center
 - Represent sets of data by using percentiles
 - Lesson 2: Representing Data
 - Represent sets of data by using dot plots
 - Represent sets of data by using stem-and-leaf plots
 - Determine whether discrete or continuous graphical representations are appropriate, and represent sets of data by using bar graphs or histograms
 - Lesson 3: Using Data
 - Identify potential bias in sampling methods and questions
 - Identify potential bias in statistics and representations of data
 - Lesson 4: Measures of Spread
 - Determine measures of spread, including the range and interquartile range of a set of data
 - Lesson on Probability
 - Find the theoretical probability of an event
 - Find the experimental probability of an event
 - Use the experimental probability to make predictions
 - Lesson on Probability of Two or More Events
 - Determine if events are independent or dependent
 - Calculate the probability of independent events

- Calculate the probability of dependent events
- Module 4: Linear and Nonlinear Functions
 - Lesson 5: Arithmetic Sequences
 - Construct arithmetic sequences
 - Apply the arithmetic sequence formula

Extensions:

- Design and present their own probability experiments. Compare their experiments with the theoretical probability of the event

Remediation:

- Integration of manipulatives (graph paper for data displays, online data display generator).
- Additional small-group instruction
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 9: Systems of Linear Inequalities and Applications of Systems

Time frame: 4 weeks

Keystone Standards: A1.1.2.2.1, A1.1.3.2.1, A1.1.3.2.2

Anchor(s) or adopted anchor: CC.2.1.HS.F.5, CC.2.2.8.B.3, CC.2.2.HS.D.7, CC.2.2.HS.D.9, CC.2.2.HS.D.10

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

- Identify solutions of systems of linear inequalities in two variables
- Solve systems of linear inequalities in two variables by graphing
- Solve systems of linear inequalities in one variable
- Solve systems of linear equations in two variables by elimination
- Compare and choose an appropriate method for solving systems of linear equation applications
- Classify systems of linear equations and determine the number of solutions

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

- Module 6: Linear Inequalities
 - Lesson 5: Graphing Inequalities in Two Variables
 - Graph the solutions of linear inequalities in one variable
 - Graph the solutions of linear inequalities in two variables
- Module 7: Systems of Linear Equations and Inequalities
 - Lesson 5: Systems of Inequalities
 - Solve systems of linear inequalities by graphing
 - Lessons 2-4: Solving Systems of Equations Algebraically
 - Solve systems of linear equations algebraically
 - Choose an appropriate method for solving systems of linear equations
 - Lesson 1: Graphing Systems of Equations
 - Classify systems of linear equations by determining the number of solutions

Extensions:

- System of linear inequalities in two variables with more than two linear inequalities

Remediation:

- Integration of manipulatives (graph paper for graphing, desmos.com to check)
- Additional small-group instruction
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 10 for 8th grade: Transformations

Time frame: 2 weeks

State Standard: CC.2.3.8.A.2

8th Grade Anchor(s) or adopted anchor: M08.C-G.1.1.1, M08.C-G.1.1.2, M08.C-G.1.1.3, M08.C-G.1.1.4

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

- Recognize properties of reflection, rotation, and translation transformations
- Explore techniques for using rigid motion transformations to create symmetric design
- Use coordinate rules for basic rigid motion transformations
- Recognize that two figures are congruent if one is derived from the other by a sequence of reflection, rotation, and/or translation transformations
- Recognize that two figures are similar if one can be obtained from the other by a sequence of reflections, rotations, translations, and/or dilations
- Use transformations to describe a sequence that exhibits the congruence between figures

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

- Transformation Unit
 - Lesson 1: Introduction to Transformations
 - Define and Identify each type of transformation
 - Lesson 2: Translations on the Coordinate Plane
 - Translate lines, angles, and shapes on a coordinate plane
 - Identify the steps taken in a translation
 - Lesson 3: Reflections on the Coordinate Plane
 - Reflect lines, angles, and shapes on a coordinate plane
 - Identify the steps taken to complete a transformation involving reflection and translation
 - Lesson 4: Rotations on the Coordinate Plane
 - Rotate lines, angles, and shapes on a coordinate plane
 - Identify the steps taken to complete a transformation involving rotation, reflection, and/or translation
 - Lesson 5: Dilations on the Coordinate Plane
 - Find the scale factor used in a dilation
 - Perform a dilation of lines, angles, and shapes on a coordinate plane using a given scale factor
 - Identify the steps taken to complete a transformation involving rotation, reflection, dilation and/or translation

Extensions:

- Transformation Logo project
- Create more difficult transformation problems

Remediation:

- Integration of manipulatives (graph paper, desmos.com, transformation work mat)
- Create and use flashcards to master vocabulary
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 10 for 7th grade: Angle Relationships and Triangles

Time frame: 2 weeks

State Standards: CC.2.3.7.A.1, CC.2.3.7.A.2

7th Grade Anchor(s) or adopted anchor: M07.C-G.1.1.1, M07.C-G.1.1.2, M07.C-G.1.1.3, M07.C-G.1.1.4, M07.C-G.2.1.1, M07.C-G.2.1.2

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

- Identify and/or describe the properties of all types of triangles
- Use and apply the triangle inequality theorem
- Describe the two-dimensional figures that result from slicing three-dimensional figures
- Identify and use properties of supplementary, complementary, and adjacent angles in a multistep problem to write and solve simple equations for an unknown angle in a figure
- Identify and use properties of angles formed when two parallel lines are cut by a transversal (e.g., angles may include alternate interior, alternate exterior, vertical, corresponding)
- Solve problems involving scale drawings of geometric figures, including finding length and area

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

- Angle Relationships Unit
 - Lesson 1: Angle Pairs
 - Identify whether angle pairs are complementary, supplementary, or vertical
 - Write and solve an equation to calculate the missing angle in an angle pair
 - Lesson 2: Transversals
 - Identify the congruent angles around a transversal.
 - Write and solve an equation to calculate the missing angles around a transversal.
 - Lesson 3: Triangles
 - Identify the properties of all types of triangles
 - Write and solve an equation to calculate the missing angle in a triangle
 - Determine if the given side lengths will make a triangle
 - Write an inequality to show the possible lengths of a missing side in a triangle
 - Lesson 4: Slicing 3-Dimensional Figures
 - Identify the 2-dimensional figure created by slicing a 3-dimensional figure
 - Lesson 5: Scale Drawings
 - Use proportions to calculate the missing length or area in a scale drawing

Extensions:

- Solve more difficult missing angle problems
- Create a scale drawing of a candy bar

Remediation:

- Integration of manipulatives (online slicing tool, model magic, toothpicks/straws, etc.)
- Additional small-group instruction (give one angle and calculate all the other angles in the diagram)
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 11: Factoring Polynomials

Time frame: 5 weeks

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

Anchor(s) or adopted anchor: CC.2.1.6.E.3, CC.2.1.HS.F.2, CC.2.2.HS.D.2, CC.2.2.HS.D.3

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

- Find the greatest common factor (GCF) and least common multiple (LCM) 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:

- Module 10: Polynomials
 - Lesson 5: Using the Distributive Property
 - Find the greatest common factor of monomials
 - Find the least common multiple of monomials
 - Factor polynomials by using the Distributive Property
 - Factor polynomials by using the Distributive Property and grouping
 - Lesson 6: Factor Quadratic Trinomials
 - Determine the factors of trinomials with a leading coefficient of 1
 - Determine the factors of trinomials with a leading coefficient not equal to 1
 - Lesson 7: Factoring Special Products
 - Factor binomials that are differences of squares
 - Factor trinomials that are perfect squares

Extensions:

- Factor quadratic trinomials where the leading coefficient is not one
- Solve application problems using factoring techniques

Remediation:

- Factor using the box method
- Use the ladder method to find the GCF and LCM
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions

- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators
- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: Algebra I

Unit 12: Domain and Range

Time frame: 2 weeks

Keystone Standards: A1.2.1.1.1, A1.2.1.1.2, A1.2.1.1.3

Anchor(s) or adopted anchor: CC.2.2.8.C.1, CC.2.2.8.C.2, CC.2.2.HS.C.1, CC.2.2.HS.C.2, CC.2.2.HS.C.3, CC.2.4.HS.B.2

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

- Identify functions and find the domain and range of relations and functions
- Graph functions given a limited domain or a domain of all real numbers
- Find the domain and range of linear segments

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

- Module 4: Linear and Nonlinear Functions
 - Lesson 6: Piecewise and Step Functions
 - Identify and graph piecewise-defined functions
 - Identify and graph step functions
 - Find the domain and range of linear segments

Extensions:

- Identify Domain and Range from non-linear equations

Remediation:

- Integration of manipulatives (graph paper, desmos.com, etc.)
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Direct instruction
- Higher order thinking questions
- Individual, pair, and small group practice
- Visual representations/modeling
- Differentiated instruction
- Teacher directed examples

Materials & Resources:

- Warm Ups
- Textbook
- Notes/examples
- Handouts (worksheets)
- Online and Digital practice (i.e. Google Docs, Google Slides, Desmos, Edpuzzle, Google Sheets, Quizizz)
- Calculators

- Google Classroom

Assessments:

- **Diagnostic:**
 - Questioning
 - Small and large group discussion
 - Quick Checks
 - Student observation
 - Online resources
- **Formative:**
 - Quizzes
 - Worksheets and activities
 - Online resources
- **Summative:**
 - End-of-unit assessment and/or projects