

Algebra Common Core Curriculum (2016- 2017)

Unit I~ Graphing

For each of the functions below, we will create a table, graph, equation and a descriptive sentence. We will introduce the following terms, domain, range, intercepts, max and min. We will discuss where the function is increasing and decreasing, positive or negative and the end behavior of the graphs. We will spend one day to two days on each of the following:

-Patterns, Equations, and Graphs

Linear Graphs

Piecewise Linear Functions

Quadratic

Exponential

Comparing Graphs

Unit II ~ Properties and Equations

-Properties of numbers

-Identities

- Order of Operations

- Solving Equations

Multi-step equations

Special Equations

Fractional Equations

Literal Equations

Unit III ~ Inequalities and Absolute Value

-Solving inequalities

- Solving Multistep Inequalities

- Compound Inequalities

-Strange Compound Inequalities

-Solving Absolute Value Equations

Unit IV ~ Word Problems

- Number Word Problems

- Perimeter Word Problems

- Consecutive Integer Word Problems

- Coin Word Problems

Unit V ~ Functions

- Intro to Functions
 - Domain and range
 - Input and output tables
 - Vertical line test
- Writing Equations of Lines
- Function Notation
- Graphing equations from a table with and without domain
- Calculator Exploration
- Slope
- Rate of Change
- Direct Variation
- Slope-Intercept Method
- Writing Equations of Parallel

Unit VI ~ More Functions

- Piecewise functions (graphing, writing, evaluating)
- Step Functions
- Arithmetic Sequences (recursive and explicit)

Unit VII ~ Systems

- Solving Linear System Graphically
- Solving by Substitution
- Solving by Elimination
- Word Problems

Unit VIII ~ Absolute Value and Inequality Graphs

- Graphing Absolute-Value Equations
- Transformations of Absolute - Value Functions
- Graphing Linear Inequalities
- Graphing Systems of Inequalities

Unit IX ~ Exponents

- Operations with Monomials
 - Multiplying
 - Power to Power
 - Zero and Negative Exponents
 - Division
- Scientific Notation
- Graphing Exponential Equations
 - Growth and Decay
 - Cubic with Transformations
- Geometric Sequence

Unit X ~ Polynomials

- Vocab, Adding and Subtracting Polynomials
- Adding and Subtracting Fractional Expressions by finding common denominator
- Undefined rational expressions
- Multiplying all polynomials (box and foil)
- GCF
- Dots
- GCF and Dots
- Tri
- Factor by Grouping
- Factor by Grouping (a greater than 1)
- Factor Completely

Unit XI ~ Solving Quadratic Equations

- Simplifying Square Roots
- Operations with Square Roots (include distributing radicals)
- Graphing square root function with transformations
- Solving Polynomial Equations in Factored Form and by Factoring
- Solving Quadratic Word Problems (recognize no real solutions)
- Completing the Square
- Quadratic Formula
- Discriminant

Unit XII ~ Graphing Quadratic Functions

- Graphing a Quadratic Equation
- Finding AOS, Vertex and Table by hand) End Behavior of a graph
- Finding the zeros of a graph and Discriminant (nature of roots)
- Roots on Calc
- Vertex form to show (transformations $f(x) + k$ and $f(x+k)$)
- Applications of Quadratic Functions
- Solving Linear Quadratic Systems Graphically and Algebraically

Unit XIII ~ Statistics

- Nature of Data
- Qualitative/ Quantitative, univariate, bivariate, bias, unbiased, correlation, causative
- Measures of Central Tendency
- Box Plot, Dot Plot
- Histograms
- Scatterplot and Regression
- Exponential and Quadratic Regression
- Residuals