

**Department:** Math  
**Revised:** April 2017

### **Mission Statement**

Every student can and should learn higher level mathematics. We will provide a variety of instructional methods and relearning opportunities for students to find success.

### **How We Will Achieve Our Mission**

- All students are expected to complete a standards aligned algebra and geometry curriculum.
- All students will be held to a high standard of learning with relearning opportunities and reassessment opportunities available to those who do not meet the standards initially.
- All students will have the opportunity to earn credit at the post-secondary level while completing high school graduation requirements.

### **Course: Functions, Statistics, and Trigonometry**

#### Data Analysis and Modeling

Students understand how to calculate measures of spread and center of data and use these concepts to compare/contrast sets of data.

Students understand how to read, construct, and interpret different methods of displaying data.

Students can find quadratic or linear model for a set of data without using a calculator.

Students can find several models for given set of data using technology and discuss which is the best using mathematical terminology.

Students can list the domain and range (independent/dependent variables) of general functions and data sets.

#### Transformation and Exploration of Data and Power, Exponential, and Logarithmic Functions

Students understand how to find, evaluate, and graph composite and inverse functions as well as identify their properties.

Students are able to identify odd functions, even functions, and inverse functions using a variety of methods and use the definition to verify their prediction.

Students understand how to correctly identify and write transformation (scale change, translation, and size change) rules or mapping of functions and their graphs.

Students understand the effect of transformations on graphs and how to find the equations of the image and pre-image given a rule (mapping) or a graph and a function.

Students understand the effect of transformation on data and on the measures of spread and center.

Students understand the inverse relationship between exponential and logarithmic functions.

Students are able to solve algebraic equations, model data, and make predictions using exponential and logarithmic functions.

Students can evaluate logarithmic and exponential expressions with and without the use of a calculator.

Students can graph and analyze the graphs of logarithmic and exponential functions using correct terminology.

#### Angle Measures and Trigonometric Graphs, Values, and Rules

Students will be able to convert between radian and degree angle measures.

Students will be able to find trigonometric values and inverse trigonometric values with and without a calculator.

Students will be able to solve problems involving sector length and area and missing angles and sides in all types of triangles.

Students will use trigonometric properties and identities to solve problems and simplify expressions.

Students will be able to graph trigonometric functions and identify period, amplitude, phase shift, and vertical shift

Students will be able to graph a trigonometric function given a linear change.

Students will be able to give a linear change given a graph or an equation and the parent function.

#### Probability and Simulation

Students will be able to find samples spaces and events for various situations.

Students will understand the probability concepts of independent, dependent, mutually exclusive, and complementary and use these concepts to determine probabilities of events occurring.

Students will be able to determine the number of ways to arrange objects (combination, permutation, and factorial).

Students will be able to use random numbers to model real life situations as well as use a probability distribution to determine expected values.

#### Analyzing and Solving Functions

Students will analyze functions using the concepts of increasing, decreasing, maximum, minimum, domain, range, zero's, and end behavior.

Students will be able to solve problems using the concept of maximum and minimum.

Students will be able to determine if two functions are inverses graphically and prove they are inverses using the definition of inverses.

Students will be able to solve a variety of functions and inequalities using a variety of methods.