MATHEMATICS

Algebra I – Areas of Focus:

Number and Quantity

- The Real Number System
  - Use properties of rational and irrational numbers
- Quantities
  - Reason quantitatively and use units to solve problems

Algebra

- Seeing Structure in Expressions
  - Interpret the structure of expressions
  - Write expressions in equivalent forms to solve problems
- Arithmetic with Polynomial and Rational Expressions
  - Perform arithmetic operations on polynomials
  - Understand the relationship between zeros and factors of polynomials
- Creating Equations
  - Create equations that describe numbers or relationships
- Reasoning with Equations and Inequalities
  - Understand solving equations as a process of reasoning and explain the reasoning
  - Solve equations and inequalities in one variable
  - Solve systems of equations
  - Represent and solve equations and inequalities graphically

Functions

- Interpreting Functions
  - Understand the concept of a function and use function notation
  - Interpret functions that arise in applications in terms of the context
  - Analyze functions using different representations
- Building Functions
  - Build a function that models a relationship between two quantities
  - Build new functions from existing functions
- Linear, Quadratic, and Exponential Models
  - Construct and compare linear, quadratic and exponential models and solve problems
  - Interpret expressions for functions in terms of the situation they model

Statistics and Probability

- Interpreting categorical and quantitative data
  - Summarize, represent, and interpret data on a single count or measurement variable
  - Summarize, represent, and interpret data on two categorical and quantitative variables
  - Interpret linear models

Geometry – Areas of Focus:

Congruence

- Experiment with transformations in the plane
- Understand congruence in terms of rigid motions
- Prove geometric theorems

- Make geometric constructions

Similarity, Right Triangles and Trigonometry

- Understand similarity in terms of similarity transformations
- Prove theorems using similarity
- Define trigonometric ratios and solve problems involving right triangles

Circles

- Understand and apply theorems about circles
- Find arc lengths and areas of sectors of circles

Expressing Geometric Properties with Equations

- Translate between the geometric description and the equations of a conic section
- Use coordinates to prove simple geometric theorems algebraically

Geometric Measurement and Dimension

- Explain volume formulas and use them to solve problems
- Visualize relationships between two-dimensional and three-dimensional objects

Modeling with Geometry

- Apply geometric concepts in modeling situations

Algebra II – Areas of Focus:

Number and Quantity

- The Real Number System
    - Extend the properties of exponents to rational exponents
- The Complex Number System
    - Perform arithmetic operations with complex numbers
    - Use complex numbers in polynomial identities and equations

Algebra

- Seeing Structure in Expressions
    - Interpret the structure of expressions
    - Write expressions in equivalent forms to solve problems
- Arithmetic with Polynomial and Rational Expressions
    - Understand the relationship between zeros and factors of polynomials
    - Use polynomial identities to solve problems
    - Rewrite rational expressions
- Creating Equations
    - Create equations that describe numbers or relationships
- Reasoning with Equations and Inequalities
    - Understand solving equations as a process of reasoning and explain the reasoning
    - Solve equations and inequalities in one variable
    - Solve systems of equations
    - Represent and solve equations and inequalities graphically

Functions

- Interpreting Functions
    - Understand the concept of a function and use function notation
    - Interpret functions that arise in applications in terms of the context
    - Analyze functions using different representations

- Building Functions
    - Build a function that models a relationship between two quantities
    - Build new functions from existing functions
- Linear, Quadratic, and Exponential Models
    - Construct and compare linear, quadratic and exponential models and solve problems
    - Interpret expressions for functions in terms of the situation they model
- Trigonometric Functions
    - Extend the domain of trigonometric functions using the unit circle
    - Model periodic phenomena with trigonometric functions
    - Prove and apply trigonometric identities

<u>Geometry</u>

- Expressing Geometric properties with Equations
    - Translate between the geometric description and the equations of conic section

<u>Statistics and Probability</u>

- Interpreting categorical and quantitative data
    - Summarize, represent, and interpret data on a single count or measurement variable
    - Summarize, represent, and interpret data on two categorical and quantitative variables
- Making Inferences and Justifying Conclusions
    - Understand and evaluate random processes underlying statistical experiments
    - Make inferences and justify conclusions from sample surveys, experiments and observational studies
- Conditional Probability and the Rules of Probability
    - Understand independence and conditional probability and use them to interpret data
    - Use the rules of probability to compute probabilities of compound events in a uniform probability model