

**Students will be introduced and master the following upon completion of:**

## **Algebra II**

**NOTE:** *The TI83+ Graphing Calculator is recommended for use at Shore Regional High School.*

- Represent situations that involve variable quantities with expressions, equations, inequalities, and matrices.
- Use algebraic rules and properties to simplify expressions and solve equations (distributive property, properties of equality and inequality, rules for exponents, and order of operations).
- Use matrices to represent situations and perform matrix operations.
- Understand the logic and purpose of algebraic procedures.
- Interpret algebraic equations and inequalities geometrically; describe geometric objects algebraically.
- Develop, explain, use, and analyze procedures for operating on algebraic expressions and matrices.
- Recognize and represent patterns, relations, and functions.
- Read, write, and understand functions using mapping, diagrams, graphs, and function notation.
- Identify range and domain restrictions on a function.
- Interpret compositions of functions.
- Recognize that relationships between a function and its inverse; find the inverse of a function.
- Translate functions.
- Analyze the effects of changes in parameters on the graphs of functions.
- Write equations that represent linear functions.
- Find restrictions on the domain of a function caused by real-world constraints.
- Determine the slope of a line.
- Use point-slope, slope intercept, and general equation of a line.
- Determine whether two lines are parallel or perpendicular.
- Solve systems of linear equations graphically, algebraically, and by using matrices.

## Algebra II - continued

- Graph linear inequalities.
- Recognize direct variation and express it as a proportion.
- Fit a line to data
- Recognize and graph compound functions; use compound functions to describe real-world situations.
- Use linear programming to solve real-life problems (e.g. maximizing profit).
- Recognize quadratic expressions and equations.
- Factor quadratics using techniques of common factor, linear binomials, and special products.
- Solve quadratic equations by factoring
- Solve quadratic equations using the quadratic formula.
- Graph quadratic functions
- Relate characteristics of a quadratic function to its graph.
- Find the zeros of a quadratic.
- Find the optimum value of a quadratic by completing the square and by graphing.
- Produce graphs of higher order polynomials using graphing technology; recognize and analyze the graphs of higher order polynomials.
- Find zeros of higher order polynomials by factoring, using rational-zeroes theorem, graphing, and using the graphing calculator “poly solver.”
- Determine the quantity of complex zeros of a given polynomial function.
- Identify local and global extreme values by analyzing technology-generated graphs.
- Use the binomial theorem to expand powers of binomials.
- Graph and represent conic sections symbolically/algebraically.
- Analyze and represent discrete function: factorial, permutation, and synthetic counting
- Use discrete models to represent and solve problems.
- Perform operations on rational expressions.

Update 11/09