

Grand Island Public Schools

ALGEBRA 3-4

Course Length: Two semesters

Grade Levels: 10, 11, 12

Prerequisite Courses: Geometry

Course Description:

This course extends algebraic concepts and prepares for courses in Precalculus, Discrete Math, and/or Statistics.

Algebra 3-4 Course Standards

As a result of their participation in this course, students will:

Strand 1: Communicating Mathematical Thinking

- Build new mathematical knowledge through problem solving. (Problem Solving)
- Apply and adapt a variety of appropriate strategies to solve problems. (Problem Solving)
- Recognize and use connections among mathematical ideas and/or apply in contexts outside of mathematics. (Connections)
- Investigate, develop, and evaluate mathematical arguments and proofs. (Reasoning and Proof)
- Select, apply, and move fluently among mathematical representations to solve problems. (Representation)

Strand 2: Number and Operations

- Use equivalent forms of radicals and exponents.
- Simplify expressions involving integral and rational exponents.
- Compare and contrast the properties of numbers in the real number system.
- Compute fluently and make reasonable estimates.
- Multiply and divide polynomials.

Strand 3: Algebraic Concepts

- Solve, graph, and interpret nonlinear equations (quadratic, absolute value, rational, polynomial, variations, exponential).
- Solve systems by graphing, substitution, elimination or matrices.
- Factor polynomial expressions.
- Graph square root, cube root, and radical function, with and without technology.
- Identify features and properties of a parabola.
- Solve and graph linear inequalities.
- Apply properties of relations and functions including notation, domain and range.
- Choose the correct domain and range for a given function, formula, situation, or viewing window.

Strand 4: Geometry, Spatial Concepts, and Measurement

- Interpret information on a coordinate graph.
- Use various representations to help understand the effects of simple transformations of functions.
- Use slope to identify perpendicular lines in a coordinate plane.
- Write and use the equation of a circle.
- Find the side lengths or angles of triangles.
- Make decisions about units and scales that are appropriate for problem solving situations involving measurement.

Strand 5: Data Analysis, Probability, and Statistics

- Use basic concepts of probability involving permutations, and combinations.
- Interpret and analyze data to solve problems.
- Use the line of best fit for given data to interpret slope and y-intercept.