## Mr: E. Torres Algebra 1: 4/4 Syllabus 2020-21

**Course Rationale: Algebra 1 is the critical element in secondary mathematics education. Topics introduced in Algebra 1 provide the foundation students require for future success in high school mathematics, critical thinking, and problem solving. The primary goal in Algebra 1 is to help students transfer their concrete mathematical knowledge to more abstract algebraic generalizations. Course**

**Description: Algebra 1 topics include recognizing and developing patterns using tables, graphs and equations. In addition, students will explore operations on algebraic expressions, apply mathematical properties to algebraic equations. Students will solve problems using equations, graphs and tables to investigate linear relationships. Technology will be used to introduce and expand upon the areas of study listed above. Use of computers and graphing calculators will be incorporated into each module.**

**Course Objectives**

**The student will:**

- **Apply and demonstrate the different way numbers are represented and used in the real world**
- **Determine the effects of operations on numbers and the relationships among these operations**
- **Select appropriate operations, and compute for problem solving**
- **Write and solve single and multi-step equations including real-world applications**
- **Explain how rates and ratios are similar or different**
- **Use rates and ratios to model and solve real-life problems**

- **Articulate under what conditions a relation is a function**
- **Describe, analyze, and generalize a wide variety of patterns, relations, and functions**
- **Display representations of a functions (equations, graphs, and tables)**
- **Connect representations of a function in a real world context and communicate mathematical thinking**
- **Solve systems of equations using various methods**
- **Use inequalities in an applied application to solve/evaluate real world data**
- **Identify, graph and analyze an exponential growth and decay function**
- **Apply various types of factoring methods to solve real-world problems**
- **Graph, analyze and solve quadratic equations**
- **Explain the concept of radical functions as applied to Geometry**
- **Explain the concept of rational functions as applied to a specific real-world situations**
- **Find probabilities of simple and compound events**
- **Analyze, create, display and interpret data using statistical methods**

**Second Semester:**

**Unit 10: Exponential functions Lesson 1: Exponential functions (variables in the exponent) Lesson 2: Exponential functions; the natural number e; exponential inequalities Lesson 3: *Applications of exponential functions Unit 10 cumulative review Unit 10 review Unit 10 test Unit 11: *Logarithms Lesson 1: Logarithm fundamentals Lesson 2: Inverse of exponential function, log function, log graphs Lesson 3: Logarithm theorems Lesson 4: Solving log equations Lesson 5: Change of base Using logs to solve exponential equations & inequalities Lesson 6: *Logarithm inequalities Lesson 7: *Applications of logarithms Unit 11 cumulative review Unit 11 review Unit 11 test Unit 12: Rational expressions Lesson 1: Dividing polynomials; the remainder theorem Lesson 2: Simplifying rational expressions (multiplying & dividing) Lesson 3: Adding and subtracting rational expressions Lesson 4: *Factoring a3 – b3 , more rational expressions Lesson 5: Complex fractions www.bluepelicanmath.com Lesson 6: Direct and inverse variation Lesson 7: *Rational and irrational numbers; classifying roots Unit 12**

**cumulative review Unit 12 review Unit 12 test Unit 13: Regression Lesson 1: Linear regression Lesson 2: Higher order regression Unit 13 cumulative review Unit 13 test**

## Grading Policy

**Your grade consists of tests, quizzes, homework, class work, journal writing and projects which are assigned a point value. Grades will be calculated by dividing the total number of points that you have earned by the maximum number of points that you could have earned and calculating a percent.**

## Common Core Standards:

**A.CED.1 Create equations and inequalities in one variable and use them to solve problems. (Include equations arising from linear and quadratic functions, and simple rational and exponential functions.) o A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.**

**F.IF.4 For a function that models a relationship between two quantities, interpret key features of the graph and the table in terms of the quantities, and sketch the graph showing key features given a verbal description of the relationship. ★ F.IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). ♣ Includes understanding functions, domain, range, intercepts, rate of change, graphing linear and exponential functions, and properties with rational exponents.**