Course Title: Algebra 1 (incorporating Probability and Statistics)		
School: THS	**Grade: 8 Honors**	**Curriculum Pacing: 36 weeks** **3 “Buffer weeks” to allow for review/remediation and enrichment.**
Unit One: Linear Equations, Inequalities, and Systems **(Unit 2-in book)**	**Unit Two: Linear Regression**	**Unit Three: Introduction to Exponential Functions**
Unit Pacing: 7 weeks	**Unit Packing: 3 weeks**	**Unit Pacing: 7 weeks**
Unit Overview: In this unit, students expand and deepen their prior understanding of expressions, equations, and inequalities. Students reason about equations, inequalities, and systems of equations and inequalities as ways to represent constraints, and they reason about the process of solving equations and inequalities in terms of finding values that satisfy those constraints. The process of finding solutions may involve rewriting and manipulating equations. Students learn to explain and validate the steps to do so. Throughout the unit, students practice reasoning about situations and mathematical representations, interpreting expressions and numbers in context, and using mathematical tools to model quantities and relationships.	**Unit Overview**: This unit will have students use their knowledge of linear functions and scatter plots. They will be expanding on this knowledge and using it to model and make predictions of real and experimental data that behaves linearly.	**Unit Overview**: In this unit, students are introduced to exponential relationships. Students learn that exponential relationships are characterized by a constant quotient over equal intervals, and compare them to linear relationships which are characterized by a constant difference over equal intervals. They encounter contexts with quantities that change exponentially. These contexts are presented verbally and with tables and graphs. They construct equations and use them to model situations and solve problems. They learn that the output of an increasing exponential function is eventually greater than the output of an increasing linear function for the same input. Students view these new types of relationships as functions and employ the notation and terminology of functions (for example, dependent and independent variables). They study graphs of exponential functions both in terms of contexts they represent and abstract functions that don’t represent a particular context, observing the effect of different values of a and b on the graph of the function f represented by

		.$f(x)=ab^x$ The context of credit (both in terms of loans and savings) is used through several lessons.
Compelling Questions 1. If I am given a description of a situation, how can I use representations like diagrams, tables and equations to help make sense of it? 2. How can I find values that satisfy each constraint individually, and values that satisfy all constraints at once when given descriptions or graphs that represent multiple constraints? 3. How can I solve equations that model real world situations? 4. What algebraic properties are used to solve or manipulate equations?	**Compelling Questions** 1. How do we determine if there is a statistically significant correlation between two variables and, if so, how can we obtain an approximation? 2. How do we create a line of best fit that describes the trends/patterns of our data?	**Compelling Questions** 1. What are the differences between linear and exponential functions? 2. How do we use exponential equations to model credit in terms of loans and savings? 3. How do we model exponential functions and state what each variable represents?
Priority Learning Targets 1. I can write an equation to describe a situation that involves multiple quantities whose values are not known, and then solve the equation for a particular variable. HSA-CED.A.2, HSA-CED.A.3 2. I can find solutions to equations by reasoning about a situation or by using algebra. HSA-REI.A, HSA-REI.B.3 3. I can write a system of inequalities to describe a situation, find the solution by graphing, and interpret points in the solution.	**Priority Learning Targets** 1. I can create a scatter plot and make inferences about the relationship between two sets of data. 2. I can model data as a linear function using linear regression. CCSS.MATH.CONTENT.HSS.ID.B.6 CCSS.MATH.CONTENT.HSS.ID.C.8 CCSS.MATH.CONTENT.HSS.ID.C.9 A.CED.1, 2, 3, 4	**Priority Learning Targets** 1. I can use exponential functions to model situations that involve exponential growth or decay. HSF-BF.A.1, HSF-IF.A.2, HSF-IF.B.4, HSF-IF.B.5, HSF-LE.A.1, HSF-LE.A.2, HSF-LE.B.5, HSN-Q.A.1, HSN-Q.A.3, HSS-ID.B.6.a 2. I can calculate rates of change of functions given graphs, equations, or tables. HSF-LE.A.1.a, HSF-LE.A.1.b, HSF-LE.A.2 3. When given data, I can determine an appropriate model for the situation described by the data.

HSA-REI.D.12, HSA-CED.A.2 PS 1: PS 2:		HSF-BF.A.1, HSF-IF.A.2, HSF-IF.B.4, HSF-IF.B.5, HSF-LE.A.1, HSF-LE.A.2, HSF-LE.B.5, HSN-Q.A.1, HSN-Q.A.3, HSS-ID.B.6.a
Unit Four: Introduction to Quadratic Functions	**Unit Five: Quadratic Equations**	**Unit Six: Interpreting and Representing Data**
Unit Pacing: 6 weeks	**Unit Pacing: 6 weeks**	**Unit Pacing: 7 weeks**
Unit Overview: In this unit, students study quadratic functions systematically. They look at patterns which grow quadratically and contrast them with linear and exponential growth. Then they examine other quadratic relationships via tables, graphs, and equations, gaining appreciation for some of the special features of quadratic functions and the situations they represent. They analyze equivalent quadratic expressions and how these expressions help to reveal important behavior of the associated quadratic function and its graph. They gain an appreciation for the factored, standard, and vertex forms of a quadratic function and use these forms to solve problems.	**Unit Overview**: In this unit, students interpret, write, and solve quadratic equations. They learn that writing and solving quadratic equations is a way to precisely describe and answer questions about quadratic functions. It is especially useful for finding input values that produce certain outputs. Students solve quadratic equations by reasoning, by rewriting expressions in factored form and using the zero product property, by completing the square, and by applying the quadratic formula. They also rewrite expressions in vertex form to solve problems about the maximum or minimum value of a function. Along the way, students see that quadratic equations may have 2, 1, or 0 solutions, and that the solutions may be rational or irrational.	**Unit Overview: I**n this unit, students will explore different methods of representing data graphically and corresponding analysis for discussing and interpreting the data and their graphs. Students will also begin to use technology to analyze and represent data graphically.
Compelling Questions 1. How do quadratic functions compare to other types of functions?	**Compelling Questions** 1. How can I find solutions to an equation that may have more than one and decide which of the solutions is the best for the	**Compelling Questions** What are the ways in which data can be organized into tables and/or graphs, and which are more useful in certain instances?

2. How can we use the different forms of a quadratic function to model different situations?	situation that I am faced with? 2. How does completing the square relate to the quadratic formula?	
Priority Learning Targets 1. I can create quadratic functions and graphs that represent a situation. HSF-BF.A.1, HSF-BF.A.1.a, HSF-IF.B.5, HSF-IF.C.7.a 2. I can relate the vertex of a graph and the zeros of a function to a situation. HSF-BF.A.1, HSF-BF.A.1.a, HSF-IF.B.5, HSF-IF.C.7.a 3. I know that the domain of a function can depend on the situation it represents. HSF-BF.A.1, HSF-BF.A.1.a, HSF-IF.B.5, HSF-IF.C.7.a	**Priority Learning Targets** 1. I can rewrite quadratic functions in different but equivalent forms of my choosing and use that form to solve problems. HSA-REI.B.4.b, HSA-REI.C.7, HSF-IF.C.8.a 2. I can use the quadratic formula to solve an equation and interpret the solutions in terms of a situation. HSA-CED.A.1, HSA-REI.A, HSA-REI.B.4.b, HSF-IF.B.5 3. I can use the factored form of a quadratic expression or a graph of a quadratic function to answer questions about a situation. HSA-REI.D, HSA-SSE.A, HSA-SSE.A.2, HSF-IF.B.4	**Priority Learning Targets** 1. I can graphically represent data as a histogram(and/or bar graph), dot plot, stem-leaf plot, frequency table, box and whisker plot, and pie chart 2. I can make inferences about a set of data using a five number summary, IQR, mean and standard deviation 3. I can analyze a set of data for unusual results.