**Algebra 2 Unit 2: Exponential and Logarithmic Functions**

**Standards:**

1. N-RN 1-2: Extend the properties of exponents to rational exponents.
   1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for the notation for radicals in terms of rational exponents.
   2. Rewrite expressions involving radicals and rational exponents using the properties of exponents.
2. A-CED1-4: Create equations that describe numbers or relationships.
   1. Create equations and inequalities in one variable and use them to solve problems.
   2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
   3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.
   4. Rearrange formulas to highlight a quantity of interest, using the same reasoning in solving equations.
3. F-LE 1-4: Construct and compare linear, quadratic, and exponential models and solve problems.
   1. Distinguish between situations that can be modeled with linear, quadratic, and exponential models.
   2. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
   3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or as a polynomial function.
   4. For exponential models, express as a logarithm the solution to abct = d where a, c, and d are numbers and the base b is 2, 10, or e; evaluate the logarithm using technology.
4. F-BF 5: Build new functions from existing functions.
   1. Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.

**Test Standards:**

1. Differentiate between linear and exponential functions
2. Rewrite expressions involving rational exponents using the properties of exponents
3. Solve expressions using the properties of exponents
4. Create exponential equations in a modeling context
   1. Growth
   2. Decay
   3. Compound Interest
5. Rewrite expressions involving logarithms using the properties of logarithms
6. Solve expressions using the properties of logarithms
7. Explain the inverse relationship between exponents and logarithms
8. Solve real-world application problems using exponents and logarithms