

Algebra I



Unit 5: Exponents & Exponential Functions

Algebra I Curriculum

Power Objective

P.O. #5: Simplify exponential expressions and analyze exponential functions. (P.O. #5 Proficiency Rubric)

Academic Vocabulary

- ☐ base
- ☐ exponent
- ☐ power
- ☐ radical
- ☐ rational exponent

- ☐ index
- ☐ exponential function
- ☐ square root
- ☐ compound interest
- ☐ decay factor

- ☐ growth factor
- ☐ exponential decay
- ☐ exponential growth
- ☐ domain
- ☐ range

Enduring Understandings

Students understand that...

- The idea of exponents can be extended to include zero and negative exponents.
- Properties of exponents make it easier to simplify products or quotients of powers with the same base or powers raised to a power or products raised to a power.
- You can use rational exponents to represent radicals.
- The parent of the family of exponential functions is $y = ab^x$. The independent variable is an exponent. This family of functions can model growth or decay of an initial amount.
- In a geometric sequence, the ratio of any term to its preceding term is a constant value.
- Operations can be performed with radical expressions and radical expressions can be simplified using the multiplication and division properties of square roots.
- Square root functions can be graphed by plotting points or using translations of the parent square root function.
- Some radical equations can be solved by squaring both sides and testing the equation.
- Exponential functions are important because they can be used to describe real-world situation involving population growth, decay of radioactive materials (half-life), compound interest.

Essential Questions

- How can you represent numbers less than one using exponents?
- How can you simplify expressions involving exponents?
- What are the characteristics of exponential functions?
- How are exponential functions used to solve real-world problems?

- How are radical expressions represented?
- What are the characteristics of square root functions?
- How can you solve a radical equation?
- How are radical equations used to solve real-world problems?