Exponents Unit Leaning Outcomes for Algebra Grade 9

***Subunit 1: Rules of Exponents***

Students will be able to effectively use properties of exponents to multiply exponential expressions.

Students will develop techniques to evaluate powers that have zero and negative exponents.

Students will use the division properties of exponents to successfully evaluate powers and simplify expressions.

Students will be able to identify the differences between linear functions and exponential functions.

Students will be able to find and correct errors in problems that have already been solved and will be able to explain where the mistake occurred.

Students will be able to apply the rules of multiplication and division of exponents to real world problems.

Students will be able to select the appropriate strategies needed to solve an exponential problem that contains more than one mathematical operation.

***Subunit 2: Scientific Notation***

Students will use scientific notation to represent extremely large numbers as well as numbers less than one.

Students will be able to estimate, compute, and solve problems involving scientific notation.

Students will be able to recognize the difference between a number written in decimal form and a number written in scientific notation.

Students will be able to use the properties of exponents to evaluate expressions that are written in scientific notation, both with and without a calculator.

Students will be able to transfer the rules of exponents from simple conversions to problem solving.

***Subunit 3: Exponential Functions***

Students will be able to sketch the graphs of exponential models on coordinate plane graph paper.

Students will be able to input exponential functions into a graphing calculator as well as appropriately adjust the windows to see the graph in its entirety.

Students will be able to write and use exponential growth models.

Students will be able to write and use exponential decay models.

Students will be able to write and solve real world, multi-step problems involving money, animal populations, depreciation of vehicles, and science phenomena.

Students will be able to use technology such as graphing calculators and power point to create visual representations that can be used to teach others what they have learned about exponents.