CONNEAUT AREA SCHOOL DISTRICT MATHEMATICS—Module 1		
UNIT OF STUDY: The Number System and Properties of Exponents	**COURSE/GRADE:** Grade 8	**# WEEKS:** 20 days

Focus (emphasis) Standards/EC

CC.2.1.8.E.1
Distinguish between rational and irrational numbers using their properties.

CC.2.1.8.E.4
Estimate irrational numbers by comparing them to rational numbers.

M08.A-N.1.1.1 Determine whether a number is rational or
irrational. For rational numbers, show that the decimal expansion terminates or repeats (limit repeating decimals to thousandths).
M08.A-N.1.1.2 Convert a terminating or repeating decimal to a
rational number (limit repeating decimals to thousandths).
M08.A-N.1.1.3 Estimate the value of irrational numbers without a
calculator (limit whole number radicand to less than 144).
Example: $\sqrt{5}$ is between 2 and 3 but closer to 2.
M08.A-N.1.1.4 Use rational approximations of irrational numbers
to compare and order irrational numbers.
M08.A-N.1.1.5 Locate/identify rational and irrational numbers at
their approximate locations on a number line.

CC.2.2.8.B.1
Apply concepts of radicals and integer exponents to generate equivalent expressions.

M08.B-E.1.1.1 Apply one or more properties of integer exponents
to generate equivalent numerical expressions without a calculator (with final answers expressed in exponential form with positive exponents).
Properties will be provided.
Example: $3^{12} \times 3^{-15} = 3^{-3} = 1/(3^3)$
M08.B-E.1.1.2 Use square root and cube root symbols to
represent solutions to equations of the form $x^2 = p$

Technology/manipulatives

Calculators, Smartboard, Study Island, rulers, white boards, highlighters, colored pencils

and $x^3 = p$, where p is a positive rational number. Evaluate square roots of perfect squares (up to and including 12^2) and cube roots of perfect cubes (up to and including 5^3) without a calculator. *Example: If $x^2 = 25$ then $x = \pm\sqrt{25}$.* **M08.B-E.1.1.3** Estimate very large or very small quantities by using numbers expressed in the form of a single digit times an integer power of 10 and express how many times larger or smaller one number is than another. *Example: Estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9 and determine that the world population is more than 20 times larger than the United States' population.* **M08.B-E.1.1.4** Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Express answers in scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology (e.g., interpret 4.7EE9 displayed on a calculator as 4.7×10^9).	
Important (reinforced) Standards/EC	**Reading, writing, speaking strategies** Journaling, read aloud, persuasive/informational/expository writing, graphic organizers, Frayer model, lecture, cooperative learning, board work, demonstration, Think-Pair-Share, note-taking, crossword puzzles
Vocabulary **Base, cube root, exponent, irrational umber, monomial, perfect cube, perfect square, power, radical sign, rational number ,repeating decimal,**	**Questioning and discussion techniques** Bellringers, Exit tickets, discovery, small/large groups, peer tutoring, games, homework review, dry erase boards

scientific notation, square root, terminating decimal	
Real life application	**Performance assessment** Test, Quiz, Performance Task, Homework, Projects, Notebooks, Study Island
Computation	**Accommodations/adaptations** Differentiation strategies, small group instruction, cooperative learning, guided practice, peer tutoring, limited problems/choices, manipulatives and models, clarity checks, diagrams and graphs
SAS Module Resources www.pdesas.org: *Grade 8 Mathematics Assessment Anchors and Eligible Content *Mathematics Glossary *PA Core Mathematics, Grades PreK-12 *PA Standards Instructional Frameworks: Math (Go to Teacher Tools then Curriculum Mapping) *Math Cluster Matrix – Tri-folds 6-7-8	