Eighth Grade Unit 2 – Exponents

Focus for Unit 2 - Show that decimal expansion either terminates or repeats eventually. Use rational approximations of irrational numbers to compare the size of irrational numbers and locate them on a number line diagram.

- Know and apply the properties of integer exponents to generate equivalent numerical expressions.
- Use square root and cube root symbols to represent solutions to equations of the form x2=p and x3 =p, where *p* is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.
- Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other.
- Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used.
- Use 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.
- Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
- Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π2).

Supporting Your Child

■ Always Talk About Math in Positive Ways

Let your child know that learning math is very important. Communicating a positive, can-do attitude about math is the single most important way for you to ensure that your child is successful in mathematics.

■ Know What Your Child Is Studying in Math

Be aware of the math your child is learning each year and know the standards they're required to meet. The standards for this unit are listed above. Ask you child what they're studying in math class, regularly check in with them about math homework.

■ Make Math an Everyday Part of Your Family

Find math at home. Involve your child in activities like shopping, cooking, and home fix-it projects to show them that math is practical and useful. Encourage your child to solve problems that involve math. Engage your child in conversations about what they're thinking about when they solve math problems. Find opportunities to explore math together.

Vocabulary

Integer Exponents: a number that tells how many times a factor is repeated in a product
Scientific Notation: a method of writing numbers as the product of two factors where the first factor is a number greater than or equal to 1 but less than 10 and the second factor is a power of 10
Rational Number: a real number written as a ratio of integers with a non-zero denominator
Irrational Number: real numbers that cannot be expressed as fractions, terminating decimals, or repeating decimals
Decimal Expansion: a numbers representation in Base 10
Rational Approximation: a subset of interpolating (to alter or change by inserting something new) methods using rational functions
Square Root: a nonnegative number which when multiplied by itself equals the given number
Cube Root: the one of the identical factors of a given number,
all the real numbers have exactly one real cube root and 2 complex roots,all the non-zero complex numbers have three distinct cube roots