***INTRODUCTION:*** Students are introduced to irrational numbers and are able to differentiate between rational and irrational numbers, as well as estimate the approximate value of irrational numbers.

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| **Grade 8 Math: The Number System** | | | | | |
| **Duration: 2 weeks**  **Topics covered: Rational Numbers, Irrational Numbers** | | | | | |
| **Common Core Learning Standards:**   * 8.N.1 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. * 8.N.2 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. *For example, by truncating the decimal expansion of , show that it is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.* | | | | | |
| **BIG IDEAS/ENDURING UNDERSTANDINGS:**   * *Rational numbers can be expressed as a fraction or repeating decimal* * *Irrational numbers are non-repeating, non-terminating decimals.* * *Irrationals numbers can be located approximately on a number line by estimating the value using perfect squares as benchmarks.* | | | **ESSENTIAL QUESTIONS:**   * What is the difference between rational and irrational numbers?      * How can you determine if a number is irrational?      * How can you find the approximate value of an irrational number? | | |
| **CONTENT:** | | | | | |
| *Subunit*: **Rational Numbers**   * square roots * Perfect squares * Cube roots | *Subunit*: **Irrational Numbers**   * Roots of non-perfect squares * Approximation of irrational numbers on a number line | | | | *Subunit*: **Comparing real numbers**   * Rational vs. Irrational * Ordering real numbers on a number line |
| **SKILLS AND PRACTICES:**   * Find the square and cube roots of perfect squares and perfect cubes * Use square roots to solve an equation. * Estimate square roots * Estimate cube roots * Classify numbers as being irrational or rational * Compare two real numbers that are either rational or irrational (less than, greater than, or equal) * Order real numbers on a number line * Justify the reasonableness of a number approximation of an irrational number | | | | | |
| **VOCABULARY / KEY TERMS:**  Perfect square, square root, radical sign, perfect cube, cube root, rational numbers, irrational numbers, real numbers, equation, solving | | | | | |
| **ASSESSMENT EVIDENCE AND ACTIVITIES** | | | | | |
| Balanced Assessment: “Greater, Lesser, or In Between”  http://balancedassessment.concord.org/m020.html | |  | | Grade 8 Number Sense Performance Task | |
| **LEARNING PLAN AND ACTIVITIES** | | | | | |
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| **Resources:** | | | | | |