Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 8* / Grade 8 (Math Regional Curriculum)

Wednesday, October 31, 2012, 2:09PM

Standard/Module: Proficiency with Geometry: 8.NS.2 (Week 32, 8 Weeks)

Stage 1: Desired Results

Standards Focus

- Supporting (20%) 8.NS.1
  8.EE.2
  8.G.6
  8.G.7
  8.G.8
  8.G.9

Grade 8 Map

Standards

NYS: CCLS:Mathematics, NYS: 8th Grade , The Number System

8.NS Know that there are numbers that are not rational, and approximate them by rational numbers.

- 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

Enduring Understandings	Essential Questions
Compare, locate, and estimate rational approximations of irrational numbers.	1. Why would you change an irrational number to a rational approximation? 2. How can you get a better approximation of the square root of a non-perfect square number? 3. Why is it important to estimate the value of irrational expressions? For example, 6п.

Critical Content

1. Rational approximation
2. Irrational numbers
3. Number line
4. Value of expressions
5. Decimal expansion

Skills	Vocabulary
1. Know perfect squares up to 225. 2. Know how to use the square root button on the calculator. 3. Compare and place rational numbers on a	Tier 2: approximate, compare, estimate, expression, locate, number line, repeating decimal, terminating decimal

number line (6.NS.6). 4. Use rational approximations of irrational numbers to compare the size of irrational numbers. 5. Locate irrational numbers on a number line diagram. 6. Estimate the value of expressions involving irrational numbers. 7. Truncating the decimal expansion of a non-perfect square number. 8. Show that the square root of a non-perfect square number is between the square roots of two perfect square numbers. 9. Explain how to continue on to get better approximations.	Tier 3: decimal expansion, irrational number, rational number, rounding, square root, truncating, √, π

Stage 2: Assessment Evidence

Assessments

Estimate Square Roots
Formative: Test: Written

Students are given irrational numbers written in square root notation and are asked to approximate the values in decimal notation to the nearest tenth. For example, √46 is between 6 and 7 (√36 and √49). Because 46 is closer to 49, the decimal approximation must be around 6.8. (actual is 6.78232 . . .).

Stage 3: Learning Plan

Learning Activities	Resources
1. Examine square numbers and determine that the inverse of "squaring" is the "square root." Write out square numbers to 15 x 15 and draw the squares on graph paper. Determine that the square root is the same as the length of one side of the square. 2. Make a number line of square numbers and square roots in consecutive order. Show where irrational numbers fit on the number line in between perfect squares in order to approximate any irrational number. 3. Students use calculators to verify their estimates of square roots that result in irrational numbers.	www.illustrativemathematics.org www.illuminations.nctm.org

Differentiation Opportunities

Put the squares from the graph paper on a large number line to provide a visual of perfect square numbers and the irrational numbers that are in between.

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