Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 6* / Grade 6 (Math Regional Curriculum)

Wednesday, October 31, 2012, 11:48AM

Standard/Module: Proficiency with Expressions and Equations 6.EE.1 (Week 7, 5 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) 6.NS.3, 6.G.1, 6.G.2

6th Grade CCS Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 6th Grade , Expressions & Equations

6.EE Apply and extend previous understandings of arithmetic to algebraic expressions.

- 1. Write and evaluate numerical expressions involving whole-number exponents.

Enduring Understandings	Essential Questions
1. Numerical expressions can be simplified to give you one quantitative result in standard form.	1. How can we prove that 5^2 is the same as 25?
2. A number written in standard form may be expressed in exponential or factor form.	2. Within exponential notation, how do you know how many factors you will multiply?
3. Squaring and cubing numbers relates to finding the area and volume of regular figures. (6.G.1, 6.G.2)	3. Based on the exponential notation, how do you know what the factor is?

Critical Content

1. Numerical expressions

2. Whole number exponents

3. Different notations

   a) exponential

b) factor form

c) standard form

d) expanded form

4. Exponents are repeated multiplication

Skills	Vocabulary
1. Write numerical expressions involving whole-number exponents 2. Evaluate numerical expressions involving whole-number exponents	Tier 2 expression base power notation factor Tier 3 exponent standard form exponential form factor form expanded form

Stage 2: Assessment Evidence

Assessments

Skill based
Formative: Performance: Skill Demonstration

Write five cubed times four as a numerical expression, then evaluate.

Problem Task
Formative: Performance: Authentic Task

Certain biological cells quadruple each hour. Start with one cell at 2:00 and find out how many cells there will be by 5:00. Create a diagram to represent the cell growth. Include an equation using exponential notation.

Stage 3: Learning Plan

Learning Activities	Resources
1. Have the students use manipulatives to show the number 3 after it has been doubled, which would represent 3 2=9 square units. Then have them show 33 = 27 cubic units with the manipulatives.	http://engageny.org/common-core/
2. Play memory games with matching numerical expressions. Example: 2^3 matches with 2 3, which matches with 2 x 2 x 2, which matches with 8.	http://illustrativemathematics.org/ www.livebinders.com/play/play/52180
3. "I Have, Who Has?" game. Example: The first student says: "I have 2^3." The second student says: "I have 8. Who has 4^2?" The third student says: "I have 16. Who has the expression equal to 27?" Etc… Extension: Every positive integer can be expressed as the sum of four or fewer squared numbers (Note: You can use the same integer	http://illuminations.nctm.org/ http://www.mathsisfun.com/geometry/polyhedron.html http://www.korthalsaltes.com/

more than once.) Examples: 5 = 1 2 + 22 101 = 42 + 62 + 72 170 = 22 + 62 + 72 + 92 Write 83 as the sum of three square numbers.	http://www.wimp.com/makingnoodles

Differentiation Opportunities

The skills of reading, writing and evaluating expressions are essential for future work with expressions and equations, and are a Critical Area of Focus for Grade 6. In earlier grades, students added grouping symbols ( ) to reduce ambiguity when solving equations. Now the focus is on using ( ) to denote terms in an expression or equation. Students should now focus on what terms are to be solved first rather than invoking the PEMDAS rule.

Through modeling, encourage students to use proper mathematical vocabulary when discussing terms, factors, coefficients, etc. Homework can be differentiated by having definitions of some of the terminology written on the homework for students who need extra assistance.

Because this is a foundational year for building the bridge between the concrete concepts of arithmetic and the abstract thinking of algebra, using hands-on materials (such as algebra tiles, counters, unifix cubes, "Hands on Algebra") to help students translate between concrete numerical representations and abstract symbolic representations is critical.

<< Previous Year

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