Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

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

Wednesday, October 31, 2012, 11:47AM

Standard/Module: Proficiency with Expressions and Equations 6.EE.2 (Week 7, 5 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) 6.NS.2, 6.G.1, 6.G.2, 6.G.4

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.

- 2. Write, read, and evaluate expressions in which letters stand for numbers.
- 2a. Write expressions that record operations with numbers and with letters standing for numbers.
- 2b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
- 2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

Enduring Understandings	Essential Questions
1. A variable is a letter representing a number or a variety of numbers. 2. Algebraic expressions may be used to represent real-world problems. 3. Based on what we allow the variable to equal, the value of the expression changes. 4. When evaluating an algebraic operation, continue to use order of operations.	1. Give an example of a real-world situation that can be represented as an algebraic expression. 2. Why does the order of operations apply to letters (variables) as well as numbers?

Critical Content

1. Algebraic expressions

   a) Parts of expressions

1) Variables

2) Terms

3) Coefficient

4) Constant

b) Translate expressions

c) Evaluate expressions

2. Order of operations

3. Formulas (Connects to 6.G.1, 6.G.2, & 6.G.4)

Skills	Vocabulary
1. Read, write and evaluate algebraic expressions in which letters stand for numbers 2. Translate algebraic expressions to verbal expressions, or vice versa 3. Identify parts of the expression using mathematical terms 4. Understand that an expression may be viewed in multiple ways, as a single entity or as a collection of operations. 5. Evaluate an algebraic expression when given the value of the variable. 6. Connects to 6.G.1, 6.G.2, & 6.G.4 (formulas)	Tier 2 expression base power notation factor variable term constant translate evaluate simplify sum difference

	product quotient formula Tier 3 exponent standard form exponential form factor form expanded form coefficient

Stage 2: Assessment Evidence

Assessments

Skill based
Formative: Performance: Skill Demonstration

Write each word phrase as an algebraic expression.

6 less than 3t

the product of *w* and 8

r divided by 15

Problem Task
Formative: Performance: Authentic Task

Hannah is 3 years younger than Katie. Joey is twice as old as Hannah. Let *k* stand for Katie's age. Write an expression to represent Hannah's age. Using *k*, write an expression for Joey's age.

skill based
Formative: Performance: Skill Demonstration

Provide an expression (e.g., $6x + 4$) for students to identify the parts.

Write an expression that has two terms and a product.

Write an expression that has a coefficient and a sum.

Skill based
Formative: Performance: Skill Demonstration

Complete a table by evaluating the algebraic expression 5x + 8 for the following x values:

x = 0,3,7,12

Problem based
Formative: Performance: Authentic Task

You know that you can find the area of a triangle using the formula $A = \frac{1}{2} bh$. If a triangle has an area of 48 cm2, what can its base and height be? Draw diagrams to justify your thinking.

Stage 3: Learning Plan

Learning Activities	Resources
Writing and evaluating expressions is to write expressions for everyday situations, and then evaluate the expressions for different numbers. Here are some typical situations you	http://engageny.org/common-core/

might use. Food Preparation: What expression can you use to show that I want to divide the pancakes I make between 4 family members? (p ÷ 4, where p is pancakes) How many pancakes does each person get if I make 12 pancakes? (3) 20 pancakes? (5) Chores: What expression can you use to show that it takes 20 minutes to do each chore? (20c or 20 × c, where c is chores) How many minutes will it take to do 3 chores? (60 minutes) 4 chores? (80 minutes) Supplies: What expression can you use to show the total number of juice boxes in the cupboard if the 30 boxes in the cupboard are decreased by some number every day? (30 − b, or 30 − j, or 30 − n) How many juice boxes are there if we use 6? (24) What if we use 15? (15)	http://illustrativemathematics.org/ www.livebinders.com/play/play/52180 http://illuminations.nctm.org/ http://www.mathsisfun.com/geometry/polyhedron.html
1. Within your classroom, have the students find situations where they can role play to compare known and unknown quantities (e.g., Student A (Dory) and Student B (Colleen); Dory says, "I have two sisters." Colleen says, "I have Dory – 1 sisters." Dory says, "You have *d* – 1 sister. You have one sister.") Use all operations.	http://www.korthalsaltes.com/ http://www.mathgoodies.com/lessons/vol7/equations.html
2. Give each pair of students an expression such as *x* + 957. Challenge them to find a way to evaluate each expression for *x* = 35, 825, and 373. Then have the students write a real-life context for each expression.	http://www.cimt.plymouth.ac.uk/projects/mepres/book7/y7s22act.pdf
1. Give an example of an expression, such as 4 *x* + 7 + *x*, and identify the parts. The terms are 4*x*, 7 and *x*. The coefficients are 4 and 1 (since there is one x). The values 4 and *x* are both factors of the product 4*x*. Give additional examples to students to identify parts of expressions in small groups.	http://www.shodor.org/interactivate/activities/SurfaceAreaAndVolume/ http://www.math.niu.edu/~rusin/uses-math/games/krypto/
2. Give the students word problems such as the following and have them find the solutions: The sum of twice a number plus 13 is 75.	http://nlvm.usu.edu/en/nav/category_g_3_t_2.html

Write the equation and find the number. 3. Use the algebra tiles to represent terms in an expression (e.g., 2x requires two x pieces) Game 1: Give students two sets of cards. The first set contains equations and the second set contains the academic vocabulary. Students turn over an equation card. Then students match academic vocabulary to the parts of the equation. Game 2: Start with a small expression, such as 2 *x* - 4. Break the expression into distinct parts. Write on separate cards 2, *x*, -, and 4. 1. Write an expression such as *x* + 6 on the board. Leave space between the symbols and numbers. Give each student an index card with a different number from 0 – 20. Have a volunteer use his or her card to cover the *x*. Have another volunteer give the value for x and evaluate the expression. Summarize by saying, for example, When *x* = 4, then *x* + 6 = 10. Repeat with other students' cards and different expressions involving any of the four operations. Vary the degree of difficulty. 2. In small groups, give students the expression 3 + 4 x 5. This represents the number of people coming to a party. There are three individuals and four families each with five members. List the steps you would use to solve this problem and justify each step. Next, have students write this expression for a variable number of families. Allow students to	Algebra Tiles

reason which number becomes the variable.	

Differentiation Opportunities

Vocabulary needs to be reinforced. Flash cards can be used.

Prompts can be written on homework and class activities like PEMDAS.

Tiered activities and homework questions

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Last Updated: Saturday, October 6, 2012, 11:34PM

Atlas Version 7.2.6
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