Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 5* / Grade 5 (Math Regional Curriculum)

Wednesday, October 31, 2012, 11:12AM

Standard/Module: Proficiency in Fractions 5.NF.3 (Week 14, 7 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects to 5.NF.4, 5.NF.5, 5.NF.6, and 5.NF.7

5th Grade Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 5th Grade , Number & Operations—Fractions
5.NF Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 3. Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Enduring Understandings

1. Math content can be applied to solve problems.
2. There is more than one algorithm for each operation with rational numbers.
3. Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
4. Fractions describe the division of a whole into equal parts, and can be interpreted in more than one way depending on the whole to be divided.
5. The denominator of a fraction is the divisor and the numerator is the multiplier.

Essential Questions

1. How do fractions represent division?
2. How do the numerator and denominator of a fraction compare with the dividend and divisor of a division expression?
3. How can we use a number line to demonstrate the relationship between fractions and division?

Critical Content

1. Fractions

   -division

   -placement on a number line

Skills

Vocabulary

1. Students must be able to use fractions to represent division. 2. Students must be able to demonstrate using a number line to show the relationship between fractions and division. 3. Students must be able to explain math using, words, pictures, numbers, and symbols.	Tier 2: expression, represent, relationship, division Tier 3: denominator, numerator, multiplier, divisor, dividend

Stage 2: Assessment Evidence

Assessments

Fair Sharing
Formative: Test: Written

Students solve "fair sharing" problems and record their answers as fractions, using visual models and equations to justify their answers.

For example, "5 kids want to share 4 pizzas so that each person gets exactly the same amount, and no pizza is left over. Show the amount that each kid gets using pictures, numbers and words."

Stage 3: Learning Plan

Learning Activities	Resources
This standard calls for students to extend their work of partitioning a number line from third and fourth grade. Students need ample experiences to explore the concept that a fraction is a way to represent the division of two quantities. **It is important that students develop the understanding of what they are doing, and why a fraction represents division instead of only being taught a set of steps or procedures.** Students are expected to demonstrate their understanding using concrete materials, drawing models, and explaining their thinking when working with fractions in multiple contexts. They read 3/5 as "three fifths" and after many experiences with sharing problems, learn that 3/5 can also be interpreted as "3 divided by 5."	www.illustrativemathematics.org www.illuminations.nctm.org

Examples: Ten team members are sharing 3 boxes of cookies. How much of a box will each student get? When working this problem a student should recognize that the 3 boxes are being divided into 10 groups, so s/he is seeing the solution to the following equation, 10 x *n* = 3 (10 groups of some amount is 3 boxes) which can also be written as n = 3÷ 10. Using models or diagram, they divide each box into 10 groups, resulting in each team member getting 3/10 of a box. **Examples:** -Two afterschool clubs are having pizza parties. For the Math Club, the teacher will order 3 pizzas for every 5 students. For the student council, the teacher will order 5 pizzas for every 8 students. Since you are in both groups, you need to decide which party to attend. How much pizza would you get at each party? If you want to have the most pizza, which party should you attend? -The six fifth grade classrooms have a total of 27 boxes of pencils. How many boxes will each classroom receive? Students may recognize this as a whole number division problem but should also express this equal sharing problem as 27/6. They explain that each classroom gets 27/6 boxes of pencils and can further determine that each classroom gets 4 3/6 or 4 ½ boxes of pencils. Expect students to demonstrate their understanding using concrete materials, drawing models, and	

explain their thinking when working with fractions in multiple contexts. Connect the meaning of multiplication and division of fractions with whole-number multiplication and division. Consider area models of multiplication and both sharing and measuring models for division. Ask questions such as, "What does 2 × 3 mean?" and "What does 12 ÷ 3 mean?" Then, follow with questions for multiplication with fractions, such as, "What does 3/4 ×1/3 mean?" and "What does 3/4 × 7 mean?" (7 sets of 3/4) and What does 7 × 3/4 mean?" (3/4 of a set of 7) The meaning of 4 ÷ 1/2 (how many 1/2 are in 4) and 1/2 ÷ 4 (how many groups of 4 are in 1/2) also should be illustrated with models or drawings that use arrays. Students may believe that multiplication always results in a larger number. Using models when multiplying with fractions will enable students to see that the results will be smaller. Additionally, students may believe that division always results in a smaller number. Using models when dividing with fractions will enable students to see that the results will be larger.	
Differentiation Opportunities	

Encourage students to use models or drawings to multiply or divide with fractions.

Begin with students modeling multiplication and division with whole numbers. Have them explain how they used the model or drawing to arrive at the solution.

Models to consider when multiplying or dividing fractions include, but are not limited to: area models using rectangles or squares, fraction strips/bars and sets of counters.

Use calculators or models to explain what happens to the result of multiplying a whole number by a fraction (3 × 12 , 4 × 12 , 5 × 12 …and 4 ×12 , 4 × 13 , 4 × 14 ,…) and when multiplying a fraction by a number greater than 1.

Use calculators or models to explain what happens to the result when dividing a unit fraction by a non-zero whole number (1/8 ÷ 4, 1/8 ÷ 8, 1/8 ÷ 1/6,…) and what happens to the result when dividing a whole number by a unit fraction (4 ÷ 1/4, 8 ÷ 1/4 12 ÷ 1/4,…).

Present problem situations and have students use models and equations to solve the problem. It is important for students to develop understanding of multiplication and division of fractions through contextual situations.

<< Previous Year

Last Updated: Wednesday, October 3, 2012, 3:57PM

Atlas Version 7.2.6
© Rubicon International 2012. All rights reserved