Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

Collaboration / Math 4* / Grade 4 (Math Regional Curriculum)

Wednesday, October 31, 2012, 10:43AM

Standard/Module: Proficiency in Fractions - 4.NF.3 (Week 23, 9 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects with 4.NF.4

4th Grade Proficiency Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 4th Grade , Number & Operations—Fractions

4.NF Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

- 3. Understand a fraction a/b with a > 1 as a sum of fractions 1/b.
- 3a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- 3b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.
- 3c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
- 3d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Enduring Understandings

1. Addition and subtraction of fractions is the joining and separating of parts referring to the same whole.
2. A fraction can be decomposed into a sum of fractions with the same denominator.
3. Mixed numbers with like denominators can be added together by using equivalent fractions, properties of operations, and knowing the relationship between addition and subtraction.
4. Word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, can be solved by using visual fraction models and equations to represent each problem.

Essential Questions

1. How is the addition and subtraction of fractions related when referring to the same whole?
2. What are the different ways that we can decompose a fraction into a sum of fractions with the same denominator?
3. What does it mean to "decompose" a fraction?
4. How do we add and subtract mixed numbers with like denominators?
5. How can we solve word problems involving the addition and subtraction of fractions with like denominators referring to the same whole?

Critical Content

1. Fractions

- unit fractions (1/b)
- non unit fractions (a/b)
- numerator/denominator
- part/whole
- equivalent fractions
- identity property to find equivalent fractions

2. Addition of fractions

- key word -" sum"
- decompose, represent with equation
- justify decompositions using visual models

3. Mixed Numbers

- conversion from mixed numbers to improper fractions
- add/subtract mixed numbers with like denominators with and without converting mixed numbers to improper fractions

4. Strategies for solving word problems

- translation of key words from words to symbols
- visual models
- algorithms
- properties of operations
- equations

Skills	**Vocabulary**
1. Students will understand that a fraction a/b with a greater than 1, is a sum of fractions 1/b. 2. Students will realize that the addition and subtraction of fractions involves the joining and separating of parts referring to the same whole. 3. Students will decompose a fraction into a sum of fractions with the same denominator in more than one way. 4. Students will record each decomposition using an equation. 5. Students will justify decompositions through using a visual fraction model or a variety of other methods. 6. Students will add and subtract mixed numbers with like denominators utilizing a variety of methods: by replacing each mixed number with an equivalent fraction, using properties of operations and the relationship between addition and subtraction.	Tier 2: fraction, addition, subtraction, word problems, numerator, denominator, visual fraction model, whole Tier 3: sum, joining, separating, mixed numbers, like denominators, properties, operations, relationship, decompose, justify, equivalent fractions

Stage 2: Assessment Evidence

Assessments

Formative: Other: Quiz
Students will be given 10 word problems that will involve decomposing fractions into a sum of fractions with the same denominator and adding and subtracting mixed numbers with like denominators. Students will be required to write an equation as well as a visual model to support their answers.

Stage 3: Learning Plan

Learning Activities	Resources
A fraction with a numerator of one is called a **unit fraction.** When students investigate fractions other than unit fractions, such as 2/3, they should be able to decompose the non-unit fraction into a combination of several unit fractions. Example: 2/3 = 1/3 + 1/3 Being able to visualize this decomposition into unit fractions helps students when adding or subtracting fractions. Students need multiple opportunities to work with mixed numbers and be able to decompose them in more than one way. Students may use visual models to help develop this understanding. **Example:**	www.illustrativemathematics.org www.illuminations.nctm.org fraction tiles

1 ¼ - ¾ = 4/4 + ¼ = 5/4 5/4 – ¾ = 2/4 or ½ Mixed numbers are introduced for the first time in Fourth Grade. Students should have ample experiences of adding and subtracting mixed numbers where they work with mixed numbers or convert mixed numbers into improper fractions. Keep in mind **Concrete-Representation-Abstract (CRA)** approach to teaching fractions. Students need to be able to show their thinking using concrete and/or representations BEFORE they move to abstract thinking.	

Differentiation Opportunities

Differentiated group activities should be used to assess and give multiple practice activities to students at all developmental levels.

Use tiered lessons. Break your lesson up into two or three levels of difficulty, with the lowest level being the minimum requirement for your grade level. Assign students to the level of difficulty you feel is best for them, or allow them to try a few problems from each level to find their best fit. Each student needs to complete just one of the three levels to officially complete the assignment.

Use technology. Many online games are easy to differentiate, as they offer a variety of levels of gameplay. You can assign the proper level to your students or once again allow the students to find their level of best fit.

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Last Updated: Wednesday, October 24, 2012, 2:10PM

Atlas Version 7.2.6
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