Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

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

Wednesday, October 31, 2012, 11:07AM

Standard/Module: Proficiency in Base 10 5.NBT.6 (F) (Week 7, 6 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects to 5.NBT.5 and 5.NBT.7

5th Grade Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 5th Grade , Number & Operations in Base Ten

5.NBT Perform operations with multi-digit whole numbers and with decimals to hundredths.

- 6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Enduring Understandings

1. Relationships can be described and generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways. For some relationships, mathematical expressions and equations can be used to describe how many members of one set are related to members of a second set.
2. There is more than one algorithm for each of the operations with rational numbers. Some strategies for basic facts and most algorithms for operations with rational numbers, both mental math and paper and pencil, use equivalence to transform calculations into simpler ones.
3. Numbers can be approximated by numbers that are close. Numerical calculations can be approximated by replacing numbers with other numbers that are close and easy to compute with mentally. Some measurements can be approximated using known referents as the unit in the measurement process.
4. Any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value.
5. Mathematics content and practices can be applied to solve problems
6. Relationships can be described and

Essential Questions

1. How can you divide mentally?
2. How can you estimate quotients?
3. How can you check that your answer is reasonable?
4. How can you use models and symbols to understand and record division?
5. When you divide a 3-digit number by a 1-digit number, how do you know where to put the first digit in the quotient?
6. When do you write zero in the quotient?
7. How can you illustrate a picture to help choose an operation?
8. How can patterns help you divide large multiples of 10?
9. How can you use compatible numbers to estimate quotients?
10. How can you use arrays to model multi-digit division?
11. How do you divide by a multiple of ten?
12. What are the steps for dividing by 2-digit numbers?
13. How can you divide larger numbers?
14. How can you solve problems involving division of larger numbers?
15. How do you identify missing information in a word problem?

generalizations made for mathematical situations that have numbers or objects that repeat in predictable ways. For some relationships, mathematical expressions and equations can be used to describe how members in one set are related to members of a second set. 7. Numbers can be approximated by numbers that are close. Numerical calculations can be approximated by replacing numbers with other numbers that are close and easy to compute with mentally. Some measurements can be approximated using known referents as the unit in the measurement process. 8. There is more than one algorithm for each of the operations with rational numbers, both mental math and pencil and paper, use equivalent to transform calculations into simpler ones. 9. Doing mathematics involves a variety of processes including problem solving, reasoning, communicating, connecting, and representing.	

Critical Content

<u>Division</u>

-algorithm

-money

-base 10

<u>Value</u>

-estimation

-equivalence

-compatible numbers

<u>Problem Solving</u>

-reasonableness

-missing information

-extra information

-diagrams

-number sentence/equation

Skills	Vocabulary
1. Students will find the quotient of a division problem whose dividend is a multiple of 10, where division involves a basic fact. 2. Students will use rounding and compatible numbers to estimate quotients of whole numbers. 3. Students will check problems for reasonableness by using various methods, including estimation and checking their final answer. 4. Students will find quotients using the model of sharing money. 5. Students will divide 3-digit whole numbers by 1-digit divisors. 6. Students will divide with zero in the quotient. 7. Students will draw pictures and equations to help them represent remainders in a problem. 8. Students will find the quotient of division problems whose dividends and divisors are multiples of 10 where the division involves a basic fact. 9. Students will use estimation to find approximate solutions to division problems with 2-digit divisors using compatible numbers. 10. Students will use arrays and other models to illustrate division. 11. Students will find quotients with a 2-digit divisor that is a multiple of ten. 12. Students will find 1-digit quotient where the divisor is a 2-digit number. 13. Students will divide a 3-digit number by a 2-digit number to find a 2-digit quotient. 14. Students will solve problems involving division of numbers with 4 or 5 digits by 2-digit divisors with an estimate, or by using a calculator when the exact answer is needed. 15. Students will determine which information is missing and identify extra unneeded	Tier 2- rounding, compatible, reasonableness, estimation, approximate Tier 3- Dividend, divisor, quotient, remainder, equation,

information in problems.	

Stage 2: Assessment Evidence

Assessments

Dividing With Whole Numbers
Formative: Test: Written

Students divide whole numbers and justify their steps using words, citing properties, and illustrating their work to explain the calculations by using equations, rectangular arrays and/or area models.

Stage 3: Learning Plan

Learning Activities	Resources
This standard references various strategies for division. Division problems can include remainders. Even though this standard leads more towards computation, the connection to story contexts is **critical**. Make sure students are exposed to problems where the divisor is the number of groups and where the divisor is the size of the groups. In fourth grade, students' experiences with division were limited to dividing by one-digit divisors. This standard extends students' prior experiences with strategies, illustrations, and explanations. When the two-digit divisor is a "familiar" number, a student might decompose the dividend using place value. **Example:** There are 1,716 students participating in Field Day. They are put into teams of 16 for the competition. How many teams get created? If you have left over students, what do you do with them? **Student 1** 1,716 divided by 16 There are 100 16's in 1,716. 1,716 – 1,600 = 116 I know there are at least 6 16's.	www.illustrativemathematics.org www.illuminations.nctm.org http://illuminations.nctm.org/ActivityDetail.aspx?ID=64

116 - 96 = 20 I can take out at least 1 more 16. 20 - 16 = 4 There were 107 teams with 4 students left over. If we put the extra students on different team, 4 teams will have 17 students. **Student 2** 1,716 divided by 16. There are 100 16's in 1,716. Ten groups of 16 is 160. That's too big. Half of that is 80, which is 5 groups. I know that 2 groups of 16's is 32. I have 4 students left over. **Student 3** 1,716 ÷ 16 = I want to get to 1,716 I know that 100 16's equals 1,600 I know that 5 16's equals 80 1,600 + 80 = 1,680 Two more groups of 16's equals 32, which gets us to 1,712. I am 4 away from 1,716 So we had 100 + 6 + 1 = 107 teams Those other 4 students can just hang out.	

Differentiation Opportunities

Example of using Base Ten Models:

968 ÷ 21

Using base ten models, a student can represent 968 and use the models to make an array with one dimension of 21. The student continues to make the array until no more groups of 21 can be made. Remainders are not part of the array.

An area model may also be used.

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