Unit Map 2012-2013

Monroe #2 - Orleans BOCES (Regional Collaboration)

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

Wednesday, October 31, 2012, 10:56AM

Standard/Module: Proficiency in Base 10 5.NBT.1 (Week 1, 12 Weeks)

Stage 1: Desired Results

Standards Focus

- Major (70%) Connects to 5.NBT.2, 5.NBT.3, and 5.NBT.4

5th Grade Map.pdf

Standards

NYS: CCLS:Mathematics, NYS: 5th Grade , Number & Operations in Base Ten
5.NBT Understand the place value system.

- 1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

Enduring Understandings

1. The base ten numeration system is a scheme for recording numbers using digits 0-9, groups of ten, and place value.
2. Numbers can be used for different purposes, and numbers can be classified and represented in different ways
3. The location of a digit in a number represents its value

Essential Questions

1. What patterns are found in place value?
2. How are fractions related to decimals?

Critical Content

Place Value
-fractions
-decimals
-base 10

Skills

1. Students must be able to represent decimals (thousandths) as fractions and fractions with denominators of 1,000 as decimals

2. Students must be able to write the standard, expanded, and word form of whole numbers

3. Students must be able to identify the value of

Vocabulary

Tier 2- value, represent, classify

Tier 3- Digits, standard form, expanded form, word form, base ten

digits in whole numbers	

Stage 2: Assessment Evidence

Assessments

Place Value Comparisons
Formative: Test: Written

Students are asked to explain place value comparisons:

Explain how the 2 in the number 542 is different from the value of the 2 in 324.

For Example: The 2 in 542 represents 2 ones or 2, while the 2 in 324 represents 2 tens or 20. Since the 2 in 324 is one place to the left of the 2 in 542 the value of the 2 is 10 times greater. Meanwhile, the 4 in 542 represents 4 tens or 40 and the 4 in 324 represents 4 ones or 4. Since the 4 in 324 is one place to the right of the 4 in 542 the value of the 4 in the number 324 is 1/10th of its value in the number 542.

Stage 3: Learning Plan

Learning Activities	Resources
Students should work with the idea that the tens place is ten times as much as the ones place, and the ones place is 1/10th the size of the tens place. In fourth grade, students examined the relationships of the digits in numbers for whole numbers only. This standard extends this understanding to the relationship of decimal fractions. Students use base ten blocks, pictures of base ten blocks, and interactive images of base ten blocks to manipulate and investigate the place value relationships. They use their understanding of unit fractions to compare decimal places and fractional language to describe those comparisons. Before considering the relationship of decimal fractions, students express their understanding that in multi-digit whole numbers, a digit in one place represents 10 times what it represents in the place to its right and 1/10 of what it represents in the	www.illustrativemathematics.org www.illuminations.nctm.org

place to its left. **Example**: A student thinks, "I know that in the number 5555, the 5 in the tens place (5555) represents 50 and the 5 in the hundreds place (5555) represents 500. So a 5 in the hundreds place is ten times as much as a 5 in the tens place or a 5 in the tens place is 1/10 of the value of a 5 in the hundreds place." Based on the base-10 number system digits to the left are times as great as digits to the right; likewise, digits to the right are 1/10th of digits to the left. For example, the 8 in 845 has a value of 800 which is ten times as much as the 8 in the number 782. In the same spirit, the 8 in 782 is 1/10th the value of the 8 in 845. To extend this understanding of place value to their work with decimals, students use a model of one unit; they cut it into 10 equal pieces, shade in, or describe 1/10 of that model using fractional language (This is 1 out of 10 equal parts. So it is 1/10‖. I can write this using 1/10 or 0.1). They repeat the process by finding 1/10 of a 1/10 (e.g., dividing 1/10 into 10 equal parts to arrive at 1/100 or 0.01) and can explain their reasoning, —0.01 is 1/10 of 1/10 thus is 1/100 of the whole unit. In the number 55.55, each digit is 5, but the value of the digits is different because of the placement. In Grade 5, the concept of place value is extended to include decimal values to thousandths. The strategies for Grades 3 and 4 should be drawn upon and extended for whole numbers and decimal numbers. For example, students need to continue to represent, write and state the value of numbers including decimal numbers. For students who are not able to read, write and represent multi-digit numbers, working	

with decimals will be challenging. Money is a good medium to compare decimals. Present contextual situations that require the comparison of the cost of two items to determine the lower or higher priced item. Students should also be able to identify how many pennies, dimes, dollars and ten dollars, etc., are in a given value. Help students make connections between the number of each type of coin and the value of each coin, and the expanded form of the number. Build on the understanding that it always takes ten of the number to the right to make the number to the left. Number cards, number cubes, spinners and other manipulatives can be used to generate decimal numbers. For example, have students roll three number cubes, then create the largest and small number to the thousandths place. Ask students to represent the number with numerals and words.	

Differentiation Opportunities

A common misconception that students have when trying to extend their understanding

of whole number place value to decimal place value is that as you move to the left of

the decimal point, the number increases in value. Reinforcing the

concept of powers of ten is essential for addressing this issue.

A second misconception that is directly related to comparing whole numbers is the idea

that the longer the number the greater the number. With whole numbers, a 5-digit

number is always greater that a 1-, 2-, 3-, or 4-digit number. However, with decimals a

number with one decimal place may be greater than a number with two or three decimal places. For example, 0.5 is greater than 0.12, 0.009 or 0.499. One method for comparing decimals it to make all numbers have the same number of digits to the right of the decimal point by adding zeros to the number, such as 0.500, 0.120, 0.009 and 0.499. A second method is to use a place-value chart to place the numerals for comparison.

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