

**Theme: Place Value and Multi-Digit Addition and Subtraction****Ohio's Learning Standards:****Number and Operations in Base Ten (NBT)****Generalize place value understanding for multi-digit whole numbers.**

- 4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
- 4.NBT.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.
- 4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place through 1,000,000.
- 4.NBT.4 Fluently add and subtract whole numbers using the standard algorithm.
- 4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. \*

**MEASUREMENT AND DATA (MD)****Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**

- 4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid, volumes, masses of objects, and money, including problems involving simple fractions or decimals, and in terms of a smaller unit. Represent measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

**Operations and Algebraic Thinking (OA)****Use the four operations with whole numbers to solve problems.**

- 4.OA.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

**Commentary:**

Students extend their work with place value to add and subtract multi-digit numbers using an efficient algorithm. They use strategies based on properties and place value to multiply and divide multi-digit numbers. Students extend their understanding of place value to 1,000,000. They understand the relationship among places in a number, and they use that understanding to read and write numbers from 1 to 1,000,000. They extend rounding to rounding numbers to any given place and using rounding to estimate in real-life situations.

**Commentary Cont.**

Students will focus on understanding the relationship between units within one system of measurement. Emphasis will be placed on solving word problems involving distances, intervals of time, liquid volumes, masses of objects, money, and area and perimeter.

Students continue to work with one- and two-step problems that use all four operations, including in which remainders must be interpreted in terms of the question being asked in the problem.

**Resources:**

Math Expressions: Unit 1, Unit 2

Every Day Counts Calendar Math: August/September

Manipulatives: Secret Code Cards and Whiteboards

Achieve The Core Fluency Resource

Home or School Real World Connection at the end of every lesson; Fourth grade math manipulatives kit; [www.Firstinmath.com](http://www.Firstinmath.com); Differentiated Instruction cards used in a math center; Science unit on landforms connects with number sense and operations; Accelerated Reader books: these books are used during the course of the year to increase math skills and comprehension of mathematical concepts. Books are available at the public library. 1. Math at the Bank: Place value and Properties of Operation by Ian Mahaney (4.8) & 2. Winning the Game: Putting Miles in their Places by Renata Brunner-Jass (3.9))

**Formative Assessments:**

Source: Math Expressions: Common Core Assessment Guide Unit 1: Quick Quiz 1, 2, 3 and 4; Unit 1 Assessment Form A and Unit 1 Assessment Form B Unit 2: Quick Quiz 1, 2, 3, and 4; Unit 2 Assessment Form A and Unit 2 Assessment Form B

**Embedded Assessments:**

Check for understanding embedded in each lesson.

**Addressing Student Misconceptions and Common Errors****4.NBT.1**

Students may become confused with extending patterns and focus on the zeros rather than the value of the digit based on its place. Concrete models comparing ones, tens, and hundreds and using appropriate language will help students recognize, extend, and describe patterns based on understanding rather than what the number looks like.

**4.NBT.2**

Students need practice reading and writing numbers. Students who struggle should focus on groups of digits before, between, and after commas. When comparing numbers, students may focus on the number furthest to the left to determine the greater number rather than considering place value. It is important that students realize they are lining up numbers in column by place value and not by a random rule.

**4.NBT.3**

Rounding to a place within a number can be difficult for students. Understanding place value and thinking flexibly about the meaning of places in a number along with practice will help students to be successful rounding to any place. Giving students meaningless rules about rounding up or down often causes much confusion.

**4.NBT.4**

Students who struggle with the algorithm need more experience with concrete materials. Be sure to scaffold examples so that students are comfortable with place value to hundreds, including one regrouping and two regroupings, and can explain their work before they work with four and five-digit numbers or multiple addends. Watch for students who subtract the smaller digit from the larger regardless of their position in the problem. These students need additional work with concrete models and decomposing tens or hundreds.

**4.NBT.5**

Students may ignore place value when multiplying multi-digit numbers. Use concrete materials to review place value understanding. At this time the use of partial products and the distributive property will help to reinforce each part of a multiplication equation. Extending simple area models to area models for multi-digit multiplication examples will also reinforce the role of partial products.

**4.OA.A.3**

Students who struggle in determining what operation to use to solve a problem need additional experience understanding the operations in a variety of situations. Students need to focus on the question and reasonableness of solutions using strategies including models, pictures, and acting it out.

**Addressing Student Misconceptions and Common Errors Cont.****4.MD.A.2**

Some students may have difficulty converting a word problem into the necessary mathematical form needed to solve the problem. To address this, teachers need to provide multiple experiences with measurement problems on an ongoing basis.

Source: [The Common Core Mathematics Companion: The Standards Decoded \(What They Say, What They Mean, How to Teach Them\)](#)

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**Suggested Pacing:****45 days**