MA.4.NSO.1.3

Overarching Standard: MA.4.NSO.1 Understand place value for multi-digit numbers.

Benchmark of Focus

MA.4.NSO.1.3: Plot, order and compare multi-digit whole numbers up to 1,000,000.

Examples: The numbers 75,421; 74,241 and 74,521 can be arranged in ascending order as74,241; 74,521 and 75,421.

Benchmark Clarifications

Clarification 1: When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the hundred thousands, ten thousands, thousands, hundreds, tens and ones digits.

Clarification 2: Scaled number lines must be provided and can be a representation of any range of numbers.

Clarification 3: Within this benchmark, the expectation is to use symbols (<, > or =).

Related Benchmark/Horizontal Alignment

- MA.4.NSO.2.5

Vertical Alignment

Previous Benchmarks	Next Benchmarks
MA.3.NSO.1.3	MA.5.NSO.1.4

Terms from the K-12 Glossary

- Whole Number

Purpose and Instructional Strategies

The purpose of this benchmark extends up to 1,000,000 the work from Grade 3 of plotting, ordering and comparing numbers using place value up to 10,000.

- Place value strategies should be used to compare numbers.
    - For example, in comparing 65,570 and 65,192, a student might say both numbers have the same value of 10,000s and the same value of 1000s; however, the value in the 100s place is different so that is where the comparison of the two numbers would be determined.
- Students need opportunities to compare numbers in various situations to build procedural fluency and to compare numbers with the same number of digits, numbers that have the same number in the leading digit position, and numbers that have different numbers of digits and different leading digits (e.g., compare the four numbers) (K12.MTR.5.1).

- As stated in MA.3.NSO.1.3, it is important for teachers to define the meaning of the ≠ symbol through instruction. It is recommended that students use = and ≠ symbols first. Once students have determined that numbers are not equal, then they can determine "how" they are not equal, with the understanding now the number is either < or >. If students cannot determine if amounts are ≠ or = then they will struggle with < or >. This will build understanding of statements of inequality and help students determine differences between inequalities and equations.

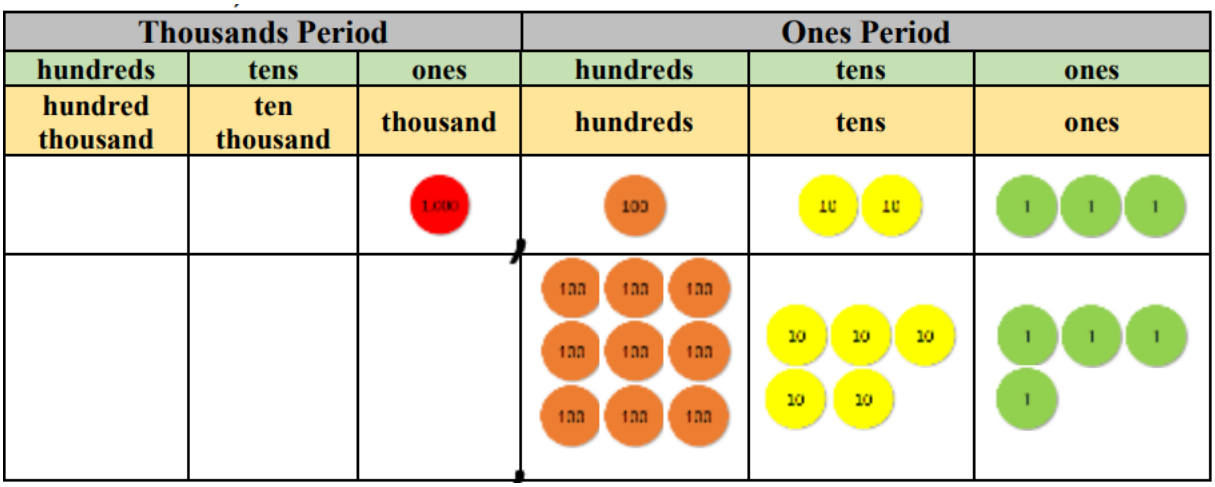
Common Misconceptions or Errors

- Students often assume that the first digit of a multi-digit number indicates the size of a number. The assumption is made that 864 is greater than 2001 because students are focusing on the leading digit instead of the place values of the number.

Strategies to Support Tiered Instruction

- Instruction includes the use of a number line, models such as place value disks, place value charts and relational symbols to compare numbers that have a different amount of digits.
    - For example, when comparing 789 and 1,202 the teacher labels the endpoints of the number line 0 and 2,000 and the midpoint of 1,000. The teacher asks students to place 789 and 1,202 on the number line and discusses the placement of the numbers and distance from zero, using the number line to show that 789 is closer to zero than 1,202 so 789 < 1,202. Also, the teacher uses the number line to show that 1,202 is farther from zero so 1,202 > 789. The teacher explains that 789 and 1,202 are different points on the number line so 789 ≠ 1,202, asking students to identify numbers that are greater than... and less than. The teacher repeats with numbers that have a different amount of digits (number line endpoints of 0 and 100,000 marked with multiples 10,000) and discusses the placement of the other numbers on the number line and if their values are greater than or less than other numbers.

    - For example, when comparing 1,123 and 954, students represent 1,123 and 954 using place value disks and a place value chart. The teacher asks students to compare these numbers, beginning with the greatest place value, explaining that the number 1,123 has 1 *thousands* and the number 954 does not have any *thousands* so 954 < 1,123 and 1,123 > 954. Additionally, the teacher explains that because 954 and 1,123 do not have the same values in the thousands place that 954 ≠ 1,123.



Questions to ask students:

How do you know that 45,687 is greater than 45,678?

- Sample answer that indicates understanding: *The greatest place value that can be compared because the digits are not the same is the tens. There are 8 tens in 45,687 and 7 tens in 45,678. This means that 45,687 is greater.*

Is the comparison statement true? 23,298 > 23,928

- Sample answer that indicates understanding: *The statement is not true because even though the numbers have the same value in the ten thousands and thousands place, the first number has fewer hundreds than the second number.*

Instructional Tasks

Instructional Task 1

Students will create numbers that meet specific criteria through this performative task. Provide students with cards numbered 0 through 9. Ask students to select 4 to 6 cards, then using all the cards make the largest number possible with all cards, the smallest number possible, the closest number to 6000, a number that is greater than 6000, or a number that is less than 6000, etc. Then discussions with the students about the numbers will solidify their understanding.

Instructional Items

Instructional Item 1

Which number correctly completes this inequality?

_____ < 44,038

a. 40,000 + 600 + 30 + 7
b. 40,000 + 5,000 + 30 + 7
c. Forty-four thousand, nine hundred fifty
d. Forty-four thousand, one hundred twelve

Achievement Level Descriptors:

Benchmark	Context	Assessment Limits
MA.4.NSO.1.3 Plot, order and compare multi-digit whole numbers up to 1,000,000. Example: The numbers 75,421; 74,241 and 74,521 can be arranged in ascending order as 74,241; 74,521 and 75,421. Clarification 1: When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the hundred thousands, ten thousands, thousands, hundreds, tens and one's digits. Clarification 2: Scaled number lines must be provided and can be a representation of any range of numbers. Clarification 3: Within this benchmark, the expectation is to use symbols (or =).	Both	Given values are limited to whole numbers between 10,001 and 1,000,000. Items using relational symbols are limited to two whole numbers. Items involving comparison may use relational words but must use relational symbols.

ALD 2	ALD 3	ALD 4	ALD 5
plots whole numbers up to 100,000.	plots and compares whole numbers up to 1,000,000 using comparison symbols (<, >, =).	plots, orders, and compares multi-digit whole numbers from 0 to 1,000,000.	identifies an error; plots, orders, and compares two or more multi-digit whole numbers from 0 to 1,000,000 using comparison symbols (<, >, =).

Additional Resources:

CPALMS

Khan Academy: Comparing Multi-Digit Whole Numbers

Khan Academy: Comparing Multi-Digit Whole Numbers Word Problems

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Resources/Tasks to Support Your Child at Home:

Using a deck of cards (Ace represents 1), play Place Value War. Having 2 players, each player chooses 6 cards and creates a 6-digit number. Using place value, work together to determine which number has a greater value. Record the comparison with the symbols <, >, or =. Player with the greatest number wins that round. Continue playing for multiple rounds.

IXL: Order Numbers Up to One Million