MA.3.NSO.1.3

Overarching Standard: MA.3.NSO.1 *Understand place value of four-digit numbers*

Benchmark of Focus
MA.3.NSO.1.3: Plot, order, and compare whole numbers up to 10,000

Examples: The numbers 3,475; 4,743 and 4,753 can be arranged in ascending order as 3,475; 4,743 and 4,753.

Benchmark Clarifications:

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

Clarification 2: Number lines, scaled by 50s, 100s or 1,000s, 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.3.NSO.1.1
- MA.3.NSO.1.2
- MA.3.AR.2.2

Vertical Alignment

Previous Benchmarks	Next Benchmarks
• MA.2.NSO.1.3	• MA.4.NSO.1.3

Terms from the K-12 Glossary
- number line
- whole numbers

Purpose and Instructional Strategies
This purpose of this benchmark is for students to compare two numbers by examining the place values of thousands, hundreds, tens and ones in each number. This work extends from the Grade 2 expectation to plot, order and compare up to 1,000 (MA.2.NSO.1.2).

- Instruction should use the terms greater than, less, than, and equal. Students should use place value strategies and number lines (horizontal and vertical) to justify how they compare numbers and explain their reasoning. Instruction should not rely on tricks for determining the direction of the inequality symbols. Students should read

entire statements (e.g., read 7,309 > 7,039, "7,309 is greater than 7,039" and vice versa) (K12.MTR.2.1, K12.MTR.3.1).

- It is imperative 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 (K12.MTR.6.1).

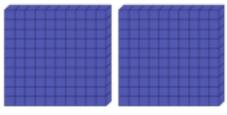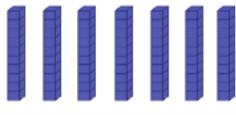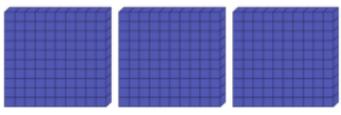## Common Misconceptions or Errors
- Often students think of these relational symbols as operational symbols instead. In order to address this misconception, allow students to have practice using the number line and/or place value blocks to see the relationship between one number and the other.

Strategies to Support Tiered Instruction

- Teacher uses a number line, base-ten blocks, place value charts and relational symbols to demonstrate the relationship between one number and the other.
    - For example, the teacher uses a number line and relational symbols to compare 487 and 623, labeling the endpoints of the number line 0 and 1,000. The teacher asks students to place 487 and 623 on the number line, discussing the placement of the numbers and distance from zero. Next, the teacher uses the number line to demonstrate that 487 is closer to zero than 623 so 487 < 623 and that 623 is farther from zero so 623 > 487. Then, the teacher explains that 487 and 623 are not the same point on the number line so 487 ≠ 623 and asks students to identify numbers that are greater than… and less than.   Finally, the teacher repeats with two four-digit numbers (number line endpoints of 0 and 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, the teacher uses base-ten blocks, a place value chart and relational symbols to compare 274 and 312. The teacher begins by having students represent 274 and 312 using base-ten blocks and a place value chart and asking students to compare these numbers, beginning with the greatest place value. Next, the teacher explains that the number 274 has 2 *hundreds* and the number 312 has *3 hundreds* so 274<312 and 312>274 and that 274 and 312 have different digits in the hundreds place so 274≠312

hundreds	tens	ones
2	7	4
3	1	2

Questions to ask students:

How does place value help you compare numbers?

- Students should be able to explain that place value helps them compare numbers because by knowing what digit is in each value helps them quickly compare two numbers without a model. Place value tells us the digit in each which will let us know which number is greater or least.

How does place value help you order numbers?

- Students should be able to explain that they use a specific place value depending on the numbers they are ordering. If all the number in a set have the same digit in the largest place value then they look at the next smaller place value to determine which number is greater. For example, if students are ordering 334, 367, and 405, they will look at the hundreds place value first and say that 405 is the largest. Then they will see the next two numbers have the same digit in the hundreds place value because that is the cause they will need to look at the tens place value and determine which number has more tens.

What place value do you need to look at when creating benchmarks on a number line for plotting?

- Students should be able to explain that they will need to look at the largest place value when plotting numbers on the number line if it is an open number line. If students are working on a created number line like the model below students will need to look at the largest one or two place values being represented to determine how the numbers are being counted. Then students should explain they used the smaller place values within the number to determine where the numbers go on a number line.
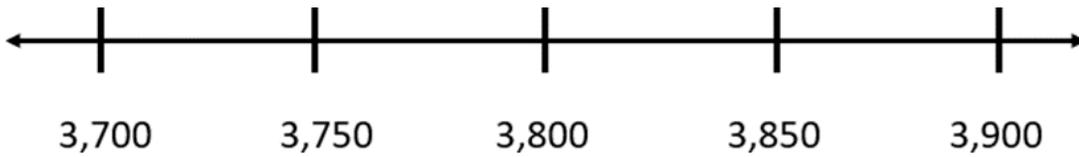
Order the numbers 900, 3,002, 799 and 3,020 from least to greatest. Explain your thinking.

- Sample answer that demonstrates understanding: Student correctly uses place value understanding to order 799, 900, 3,002 and 3,020.

Instructional Tasks

Instructional Task 1

Plot the numbers 3,790, 3,890, 3,799, 3,809 on the number line below

3,700   3,750   3,800   3,850   3,900

Choose two values from the list and compare them using >, <, or =.

Choose a number between 3,799 and 3,809 and plot it on the number line.

Use evidence from your number line to justify which number is greatest.

Instructional Items

Instructional Item 1

Which of the following correctly compares 6,909 and 6,099?

   A. 6,909 < 6,099, because the value of the 9 in the tens place of 6,099 is greater than the value of the 0 in the tens place of 6,909.
   B. 6,909 > 6,099, because the value of the 9 in the tens place of 6,099 is greater than the value of the 0 in the tens place of 6,909.
   C. 6,909 < 6,099, because the value of the 9 in the hundreds place of 6,909 is greater than the value of the 0 in the hundreds place of 6,099.
   D. 6,909 > 6,099, because the value of the 9 in the hundreds place of 6,909 is greater than the value of the 0 in the hundreds place of 6,099.

Achievement Level Descriptors

Benchmark	Context	Assessment Limits
MA.3.NSO.1.3 Plot, order and compare whole numbers up to 10,000. Example: The numbers 3,475; 4,743 and 4,753 can be arranged in ascending order as 3,475; 4,743 and 4,753. Clarification 1: When comparing numbers, instruction includes using an appropriately scaled number line and using place values of the thousands, hundreds, tens and ones digits. Clarification 2: For items about plotting, number lines, scaled by 50s, 100s or 1,000s, 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 1,001 and 10,000. 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 10,000.	plots and compares whole numbers up to 10,000 using comparison symbols (<, >, =).	plots, orders, and compares whole numbers up to 10,000.	identifies an error; plots, orders, and compares whole numbers up to 10,000 using comparison symbols (<, >, =).

Additional Resources:

CPALMS

Comparing Two Numbers (must sign in as a teacher or accessible for students with a login)

Comparing Numbers Game (Some questions may go beyond the content limits.)

Comparing Number Unit on Khan Academy

Ordering Numbers Game

Ordering and Sequencing Numbers Games

Resources/Tasks to Support Your Child at Home:

Create number lines with benchmark points and have your child locate where a given number would be located.

Create numbers with a deck of up to 5 digits with your child and compare who has the bigger number.