

MA.5.NSO.1.4

Overarching Standard: *MA.5.NSO.1 understand the place value of multi-digit numbers with decimals to the thousandths place.*

Benchmark of Focus

MA.5.NSO.1.4: Plot, order and compare multi-digit numbers with decimals up to the thousandths.

Example:

The numbers 4.891, 4.918 and 4.198 can be arranged in ascending order as 4.198, 4.891 and 4.918.

Example:

$0.15 < 0.2$ because *fifteen hundredths* is less than *twenty hundredths*, which is the same as *two tenths*.

Benchmark Clarifications:

Clarification 1: When comparing numbers, instruction includes using an appropriately scaled number line and using place values of 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.5.NSO.2.4/2.5
- MA.5.AR.2.1/2.2/2.3

Vertical Alignment

Previous

Benchmarks:

- MA.4.NSO.1.3
- MA.4.NSO.1.5

Next Benchmarks:

- MA.6.NSO.1.1

Purpose and Instructional Strategies

The purpose of this benchmark is for students to use place value understanding to plot, order and compare multi-digit numbers with decimals to the thousandths. In Grade 4 (MA.4.NSO.1.5), decimals were plotted to the hundredths, and in Grade 6 (MA.6.NSO.1.1) rational numbers, including negative numbers, will be plotted.

- During instruction, students should apply understanding of flexible representations from MA.5.NSO.1.3 to help them reason while plotting, ordering and comparing.
- During instruction, teachers should show students how to represent these decimals on scaled number lines. Students should use place value understanding to make comparisons.
- Instruction should expect students to justify their arguments when plotting, comparing and ordering.

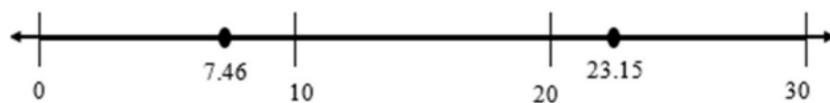
Common Misconceptions or Errors

Students may be confused when comparing numbers that have the same digits (but different values). For example, when comparing 2.459 and 13.24, a student may not consider the magnitude of the numbers and only look at their digits. That student may claim that 2.459 is greater than 13.24 because the digit 2 is greater than the digit 1 (though they are comparing 2 and 10).

Strategies to Support Tiered Instruction

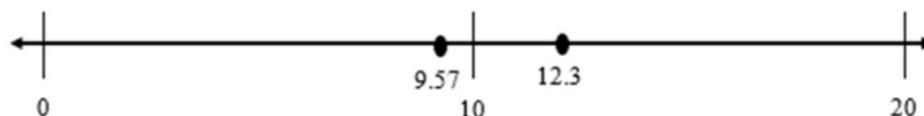
- Instruction includes the use of place value charts, number lines and relational symbols to compare numbers to the thousandths that have the same amount of digits but different values. It is imperative for students to develop a conceptual understanding of rounding, such as what the benchmarks are, using place value understanding to round numbers without instruction of mnemonics, rhymes or songs.
 - For example, when comparing 7.468 and 23.15, students record 7.468 and 23.15 in a place value chart. The teacher asks students to compare these numbers, beginning with the greatest place value and explains that the number 23.15 has 2 tens and the number 7.468 does not have any tens so $7.468 < 23.15$ and $23.15 > 7.468$ even though both numbers have the same amount of digits. Also, students plot 7.468 and 23.15 on a number line to compare the magnitude of the numbers.

Tens	ones	tenths	hundredths	thousandths
	7	4	6	8
2	3	1	5	



- For example, when comparing 12.3 and 9.57 students record 12.3 and 9.57 in a place value chart. The teacher asks students to compare these numbers, beginning with the greatest place value while explaining that the number 12.3 has one ten and the number 9.57 does not have any tens so $9.57 < 12.3$ and $12.3 > 9.57$ even though both numbers have the same amount of digits. Also, students plot 12.3 and 9.57 on a number line to compare the magnitude of the numbers.

Tens	ones	tenths	hundredths
1	2	3	
	9	5	7



Questions to ask students:

Which is greater 4,276.657 or 4,276.675? How do you know?

- Sample answer that indicates understanding:
 - The whole number is the same value, the digits in the hundredths and thousandths are switched making 4,276.675 thousandths the greater value. Use of place value language in comparing the values is important to show understanding of this benchmark.

Which is less 398.209 or 398.290? How do you know?

- Sample answer that indicates understanding:
 - The whole numbers are the same value. The decimal has switched the digits 0 and 9 to create different values... 209 thousandths is less than 290 thousandths... therefore 398.209 is less than 398.290.

Instructional Tasks

Instructional Task 1

Part A. Plot the numbers 1.519, 1.9, 1.409 and 1.59 on the number line below.

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

Part C. Choose a number between 1.519 and 1.59 and plot it on the number line.

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



Instructional Items

Instructional Item 1

Select all the statements that are true.

- 13.049 $<$ 13.49
- 13.049 $<$ 13.05
- 2.999 $>$ 28.99
- 1.28 $<$ 1.31
- 5.800 = 5.8

Achievement Level Descriptors:

Benchmark		Context	Assessment Limits
<p>MA.5.NSO.1.4 Plot, order and compare multi-digit numbers with decimals up to the thousandths. Example: The numbers 4.891; 4.918 and 4.198 can be arranged in ascending order as 4.198; 4.891 and 4.918. Example: $0.15 < 0.2$ because <i>fifteen hundredths</i> is less than <i>twenty hundredths</i>, which is the same as <i>two tenths</i>. Clarification 1: When comparing numbers, instruction includes using an appropriately scaled number line and using place values of 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 $=$).</p>		Mathematical	<p>Items must include at least one multi-digit number with decimals to the thousandths. Items using relational symbols are limited to two multi-digit numbers.</p> <p>Items involving comparison may use relational words but must use relational symbols.</p>
ALD 2	ALD 3	ALD 4	ALD 5
plots and compares multi-digit numbers with decimals up to the hundredths, using scaled number lines and place value.	plots, orders, and compares multi-digit numbers with decimals up to the hundredths.	plots, orders, and compares multi-digit numbers with decimals up to the thousandths.	identifies an error and plots, orders, and compares multi-digit numbers with decimals up to the thousandths, when presented in multiple forms.

Additional Resources:

[CPALMS](#)

Resources/Tasks to Support Your Child at Home:

[Game for Comparing Decimals](#)