MA.3.NSO.1.1

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

Benchmark of Focus

MA.3.NSO.1.1 Read and write numbers from 0 to 10,000 using standard form, expanded form and word form

Examples: The number two thousand five hundred thirty written in standard form is 2,530 and in expanded form is 2,000+500+30.

Related Benchmark/Horizontal Alignment
- MA.3.NSO.1.2

Vertical Alignment

Previous Benchmarks
- MA.2.NSO.1.1

Next Benchmarks
- MA.4.NSO.1.2

Terms from the K-12 Glossary
- expression
- whole number

Purpose and Instructional Strategies

The purpose of this benchmark is for students to express numbers in standard form, expanded form, and word form. This work extends from the Grade 2 expectation to read and write numbers within 1,000 using standard form, expanded form and word form (MA.2.NSO.2.1).

- Students learn to express multi-digit whole numbers using the place value of digits to name them in words. For example, *two thousand five hundred thirty* is named after the 2 in the *thousands* place, the 5 in the *hundreds* place, and the 3 in the *tens* place.
- Students express multi-digit whole numbers by decomposing them by place value and showing them as an addition expression with the value of each nonzero digit. For example, 2,530 is decomposed as 2,000 + 500 + 30.
- Decomposing numbers in expanded form helps students understand how addition and subtraction algorithms work, as well as helps them use the distributive property when multiplying multi-digit numbers (K12.MTR.2.1).
- Throughout instruction, teachers should ensure students have practice with problems that include both vertical and horizontal forms, including opportunities for students
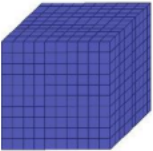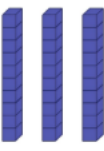
to apply the commutative and associative properties. This will provide students opportunities to explain their thinking and show their work by using place-value strategies and algorithms. In addition to verifying that their answer is reasonable (K12.MTR.3.1, K12.MTR.6.1).
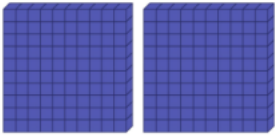
Common Misconceptions or Errors
- When the value of a digit in a multi-digit whole number is 0, students can misunderstand that it represents 0 of that place value. For example, in the number 2,530, there are 0 *ones.* In the number 1,008, there are 0 *hundreds* and 0 *tens.*)

Strategies to Support Tiered Instruction

- Instruction includes using models and writing three- and four-digit numbers with a zero in various place values. A place value chart and models such as base-ten blocks or place value disks can be used to help students understand that when the value of a digit in a multi-digit whole number is 0, it represents a 0 of that place value.
  - For example, in the number 1,030 there are 0 hundreds (beyond the ten hundreds represented by the 1 in the thousands place) and 0 ones (beyond the ones represented by the other digits).

	thousands	*hundreds*	*tens*	*ones*
Standard Form	1	0	3	0
Place Value Disks				
Word Form	*one thousand*		*thirty*	
Expanded Form	1,000		30	
	1,000 + 30			

  - For example, in the number 203, there are 0 tens.

	hundreds	tens	ones
Standard Form	2	0	3
Base-Ten Blocks			
Word Form	*two hundred*		*three*
Expanded Form	200		3
	200 + 3		

Questions to ask students:

What is the value of the digit in each place value?
- If given the number 7,415; a student should respond stating that the 5 is in the one's place, a 1 is in the ten's place, a 4 is in the hundred's place, and a 7 is in the thousands' place.

How does place value help you express the number in expanded form?
- Students should be able to identify that the digit in each place value can be expressed in different ways. Have them model the number with manipulatives and label the value in each place value then connect that modeling to how it looks in expanded form. Place value helps us understand what the value of each digit is and how to represent it in expanded form.

What is the value of each place value when you are expanding the number from standard form?
- Students should connect the digit in each place value by representing its value of it. For example, if given the number 3,567 the teacher should have students identify the digit in each place value (7 in the one's, 6 in the ten's, 5 in the hundreds, and 3 in the thousands.) After the student identifies the digit in each place value, they should use it to connect to representing said value. Because there are 3 thousands in 3,567; you would represent it in standard form 3,000 and add the next place value. If students are struggling to understand why addition is the operation to connect the place values, have them add up all the place values to see that the sum is the number you are working with.

What is another way to represent the number in expanded form when there is a 0 in a place value? Why do we not have to represent it?
- Students should be able to explain that they do not have to represent the 0 in the place value of a given number. If they represent it and add all the place values, the 0 will not change the sum of the number. If they do not represent it and add all the place values, the sum will not be effected. (304 can be expressed in two ways: 300 + 0 + 4 or 300 + 4)

Ask students to write 4,609 in word form.
- Student should be able to write *four thousand, six hundred nine*.

Instructional Tasks

Instructional Task 1

Henry says that the number 9,300 is read as nine thousand three. Noelle says that 9,300 is read as nine thousand thirty. Do you agree with either Henry or Noelle? Why or why not? Use expanded form to prove your thinking.

Instructional Items

Instructional Item 1

Which shows three thousand seventy-nine in expanded form?

a. 300 + 70 + 9
b. 3,000 + 70 + 9
c. 3,000 + 70 + 90
d. 3,000 + 700 + 90

Achievement Level Descriptors

Benchmark	Context	Assessment Limits
MA.3.NSO.1.1 Read and write numbers from 0 to 10,000 using standard form, expanded form and word form. Example: The number two thousand five hundred thirty written in standard form is 2,530 and in expanded form is 2,000 + 500 + 30.	Mathematical	Given values are limited to whole numbers between 1,001 and 10,000.

ALD 2	ALD 3	ALD 4	ALD 5
N/A	reads and writes numbers from 0 to 10,000 using standard form and word form.	reads and writes numbers from 0 to 10,000 using standard form, expanded form, and word form.	reads and writes numbers from 0 to 10,000 using standard form, expanded form, and word form interchangeably.

Additional Resources:

CPALMS

Candy Sales are Booming (Expanded Notation)

Candy Engineer (Place Value)

Khan Academy Unit on Place Value (including videos and activities)

Resources/Tasks to Support Your Child at Home:

Create numbers up to 99,999 and have your child express it in expanded form.

Say a 5-digit number and have your child write it in standard form.

Create a matching game with numbers written in different forms for your child to match.

Use playing cards to have your child create a number and read it to you aloud.