

## MA.4.NSO.2.6

**Overarching Standard:** *MA.NSO.2 Build an understanding of operations with multi-digit numbers including decimals*

### Benchmark of Focus

**MA.4.NSO.2.6:** Identify the number that is one-tenth more, one-tenth less, one-hundredth more and one-hundredth less than a given number.

*Example:* One-hundredth less than 1.10 is 1.09.

*Example:* One-tenth more than 2.31 is 2.41.

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### Related Benchmark/Horizontal Alignment

- MA.4.NSO.1.5
- MA.4.FR1.1/1.2
- MA.4.M.1.2
- MA.4.M.2.2

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### Vertical Alignment

Previous Benchmarks	Next Benchmarks
MA.2.NSO.2.2	MA.5.NSO.2.3
	MA.5.NSO.2.4

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### Terms from the K-12 Glossary

- Equation
- Expression

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### Purpose and Instructional Strategies

The purpose of this benchmark is for students to develop an understanding of place value with tenths and hundredths in addition and subtraction.

- This benchmark extends upon students' thinking about 1 more/less from whole numbers to decimals. Students should continue using place value understanding to reason how adding and subtracting 1 tenth and 1 hundredth changes a number's value.
- Teachers should use familiar manipulatives to help connect students' exploration of decimals to whole numbers. These materials include base-ten blocks, tenths, and hundredths charts (modeled after hundred charts students used in primary), and place value mats. During instruction, teachers model correct vocabulary consistently to describe decimals and expect the same from students (e.g., the number 1.09 is be read as "one *and* 9 hundredths").

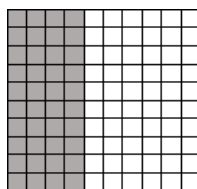
- In this initial exploration of decimal addition and subtraction, the expectation is to develop understanding using manipulatives, visual models, discussions, estimation, and drawings, with the focus being on adding and subtracting 1 tenth and 1 hundredth. This prepares students for the broader exploration of adding and subtracting decimals in MA.4.NSO.2.7.

### Common Misconceptions or Errors

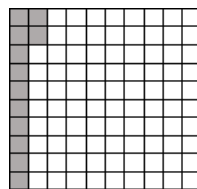
- When using base-ten blocks, it is important to first identify the value of each block. Students may have preconceptions about relating units to ones, rods to tens, and flats to hundreds, which can be confusing when their values shift from whole numbers to decimals. Teachers should share the relationship between the blocks (each larger block is ten times larger the next smaller block) so that students understand they can be used flexibly.
- Students can struggle to understand that one-hundredth is smaller than one-tenth because of one hundred is larger than one ten. During instruction, emphasize that one-hundredth is smaller because it would require 100 hundredths to equal 1 whole and only 10 tenths to equal 1 whole.

### Strategies to Support Tiered Instruction

- Instruction includes opportunities to model and represent decimals.
  - For example, if a 10 by 10 grid of 100 represents one whole, students shade in 0.4 on the grid using the appropriate language to connect “four-tenths” to the decimal 0.4. Then, students shade in what 0.12 represents. The teacher connects the language “twelve hundredths” to the decimal 0.12. Students compare the decimals using the visuals. This will help solidify the understanding that tenths are larger than hundredths. Using visuals will also connect the learning of one tenth more/less and one hundredth more/less.



0.4



0.12

- Instruction includes building decimals with base ten blocks.
  - For example, the teacher asks students to build 0.3 (three-tenths) and 0.4 (four-tenths).



0.3



0.4

Students physically see that 0.3 is one-tenth less than 0.4.

- During instruction, the teacher shares the relationship between the blocks (each larger block is ten times larger the next smaller block) to demonstrate that they can be used flexibly.
    - For example, emphasize that one-hundredth is smaller because it would require 100 hundredths to equal 1 whole and only 10 tenths to equal 1 whole.
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## Questions to ask students:

Ask students how base ten blocks help when adding/subtracting decimals.

Ask a student to show you using base ten blocks to show the answer to  $2.8 + .1$

- Sample answer that indicates understanding: *I must line up the place values because tenths need to be added to tenths, hundredths with hundredths, ones with ones, etc., therefore the correct answer is 2.9*
  - Sample answer that indication a misunderstanding: *The student may indicate the answer is 2.81 or 3.8.*
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## Instructional Tasks

### *Instructional Task 1*

Kathy says that 1 tenth more than 3.9 is 4.

Mickey says that 1 tenth more than 3.9 is 3.91.

Who is correct? Explain how you know.

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## Instructional Items

### *Instructional Item 1*

What is one tenth more than 3.8?

What is one tenth less than 7?

What is one hundredth more than 15.29?

What is one hundredth less than 7?

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## Achievement Level Descriptors:

Benchmark		Context	Assessment Limits
MA.4.NSO.2.6 Identify the number that is one-tenth more, one-tenth less, one-hundredth more and one-hundredth less than a given number. Example: One-hundredth less than 1.10 is 1.09. Example: One-tenth more than 2.31 is 2.41.		Mathematical	N/A
ALD 2	ALD 3	ALD 4	ALD 5
identifies the value of the digits in the tenth and hundredth place.	identifies the number that is one-tenth more, one-tenth less than a given number.	identifies the number that is one-tenth more, one-tenth less, one-hundredth more, and one-hundredth less than a given number.	identifies the number that is one-tenth more, one-tenth less, one-hundredth more, and one-hundredth less than a given number where more than two place values are affected; uses error analysis.

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### Additional Resources:

[CPALMS Resources](#)

[Adding Decimals Using Base 10 Blocks](#)

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### Resources/Tasks to Support Your Child at Home

[Khan Academy: Introduction to adding tenths](#)

[Splash Learn – Adding Decimals](#)