

MA.4.NSO.1.4

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

Benchmark of Focus

MA.4.NSO.1.4: Round whole numbers from 0 to 10,000 to the nearest 10, 100 or 1,000.

Examples:

- The number 6,325 is rounded to 6,300 when rounded to the nearest 100.
 - The number 2,550 is rounded to 3,000 when rounded to the nearest 1,000.
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Related Benchmark/Horizontal Alignment

- MA.4.NSO.2.5
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Vertical Alignment

Previous Benchmarks	Next Benchmarks
MA.3.NSO.1.4	MA.5.NSO.1.5

Terms from the K-12 Glossary

- Whole Number
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Purpose and Instructional Strategies

The purpose of this benchmark is for students to use place value understanding to explain and reason about rounding. Students should have numerous experiences using a number line and a one hundred chart as tools to support their work with rounding. This benchmark continues instruction of rounding from Grade 3, where students rounded numbers from 0 to 1,000 to the nearest 10 or 100 (MA.3.NSO.1.4).

- In Grade 4, rounding is not a new concept and students need to build on the skills of rounding to the nearest 10 or 100 (MA.3.NSO.1.4) to include larger numbers and place value. What is new for Grade 4 is rounding to the nearest 1,000 and to digits other than the leading digit (e.g., round 3,960 to the nearest hundred). This requires more complex thinking than rounding to the nearest ten thousand because the digit in the hundreds place represents 900 and when rounded it becomes 1,000, not just zero. Students should also begin to develop some efficient rules for rounding fluently by building from the basic strategy of - "Is 37 closer to 30 or 40?" Number lines are effective tools for this type of thinking. Students need to generalize the rule for much larger numbers and rounding to values that are not the leading digit.
- Rounding numbers is a skill that helps students estimate reasonable solutions when

using the four operations. Instruction of rounding skills should be taught within the context of estimating while when using the four operations. Rounding numbers in an expression should be done before performing operations to estimate reasonable sums or differences. Rounding sums, differences, products and quotients should not be done after students have already performed operations.

- Instruction should not focus on tricks for rounding that do not focus on place value understanding or the use of number lines.

Common Misconceptions or Errors

- Teaching only rote procedures for rounding may lead to misconceptions about the magnitudes of numbers. Students may need to have a strong foundation of place value concepts before students may find success with rounding.

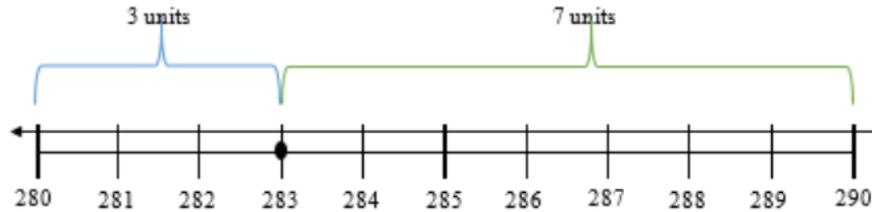
Strategies to Support Tiered Instruction

- Instruction includes using number lines and place value understanding to round numbers to the nearest, 10, 100, or 1,000. Instruction provides opportunities to reason about the magnitude of numbers using benchmarks and place value concepts.
 - For example, the teacher has students round 3,874 to the nearest thousand using a number line and place value understanding, explaining that the endpoints of the number line will be represented using thousands, because they are rounding to the nearest thousand. Next, the teacher explains that there are 3 thousands in the number 3,874 and one more thousand would be 4 thousands. The teacher then represents these endpoints on the number line as 3 thousands (3,000) and 4 thousands (4,000) with the mid-point labeled as 3 thousand and 5 hundreds (3,500). This midpoint is halfway between 3,000 and 4,000. Students are asked to plot 3,874 on the number line and discuss if it is closer to 3,000 or 4,000 while the teacher explains that 3,874 rounds to 4,000 because it is greater than the midpoint of 3,500 and closer to 4,000 on the number line.



- For example, students round 283 to the nearest ten using a number line and place value understanding while the teacher explains that the endpoints of the number line will be represented using tens, because they are rounding to the nearest ten. The teacher then explains that there are 28 tens in the number 283 and one more ten would be 29 tens, representing these endpoints on the number line as 28 tens (280) and 29 tens (290). The midpoint on the number line can be labeled as 28 tens and 5 ones (285). This midpoint is halfway between 280 and 290. Ask students to plot 283 on the number line and discuss if it is closer to 280 or 290. Explain that

283 rounds to 280 because it is 7 units away from 290 and only 3 units away from 280. It is also less than the midpoint of 285.



Questions to ask students:

What is rounding and why is rounding important?

- Sample answer that indicates understanding: *We round to get an estimate and see if an answer is reasonable.*

How could you use the tool of a number line to help you round?

- Sample answer that indicates understanding: *A number line can help you visualize the range, middle number and location of the number to determine what to round to.*

What is 2,374 rounded to the nearest hundred? What is 2,374 rounded to the nearest ten?

- Sample answer that indicates understanding: *The range is 2,300 to 2,400 and 2,374 is closer to 2,400. This means that 2,374 rounded to the nearest hundred is 2,400.*
- Sample answer that indicates understanding: *The range is 2,370 to 2,380 and 2,374 is closer to 2,370. This means that 2,374 rounded to the nearest ten is 2,370.*

Ask students if they can round larger numbers (for example, 4,810) without using a number line and explain how they knew the estimate.

- Sample answer that indicates understanding: *When rounding 4,810 to the nearest thousand, it would be 5,000 because I know that 800 means the number is closer to the next thousand, which would be 5,000.*

Why does rounding 6,982 to the nearest hundred also change the value of the thousands place?

- Sample answer that indicates understanding: *When rounding 6,982 to the nearest hundred we must round to the next hundred after 900, but there isn't another hundred without going out of the 6 thousands place. We must crossover to the next thousands place which is 7,000.*

Instructional Tasks

Instructional Task 1

What is the smallest number that rounds to 4,000 to the nearest *ten*?

What is the smallest number that rounds to 4,000 to the nearest *hundred*?

Instructional Items

Instructional Item 1

What is 5,686 rounded to the nearest *hundred*?

- a. 5,600
- b. 5,690
- c. 5,700
- d. 6,00

Achievement Level Descriptors:

Benchmark		Context	Assessment Limits
MA.4.NSO.1.4 Round whole numbers from 0 to 10,000 to the nearest 10, 100 or 1,000. Example: The number 6,325 is rounded to 6,300 when rounded to the nearest 100. Example: The number 2,550 is rounded to 3,000 when rounded to the nearest 1,000.		Both	Given values are limited to whole numbers between 1,001 and 10,000.
ALD 2	ALD 3	ALD 4	ALD 5
rounds whole numbers from 0 to 10,000 to the nearest 10 and 100 where the digit to the left is not affected.	rounds whole numbers from 0 to 10,000 to the nearest 10 and 100.	rounds whole numbers from 0 to 10,000 to the nearest 10, 100, or 1,000.	identifies an error and generates possible numbers given their rounded value.

Additional Resources:

[CPALMS Resources](#)

Smathsmarts Blog Post: [Round and Round we go...Where will we stop...At Rounding?](#)

Khan Academy: [Rounding Whole Number to Nearest Hundred](#)

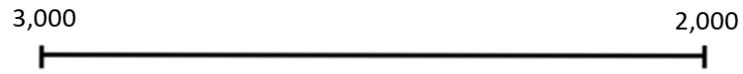
Khan Academy: [Rounding Whole Numbers to Nearest Thousand](#)

Khan Academy: [Rounding Whole Numbers with a Missing Digit](#)

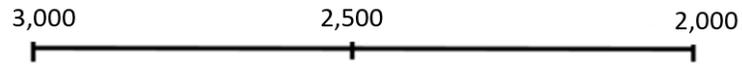
Resources/Tasks to Support Your Child at Home:

- Roll, spin or create a 4-digit number with a deck of cards. Choose a place to have your child round to and encourage them to draw a number line to prove how they rounded the original number. It's also helpful to break down the steps to creating a number line to round by first choosing the range, then the middle number, the location of the number and then what they would round to, based on the location.
 - For example: Use cards to create 2,639 and round to the nearest thousands place.

First, determine the range for the given number.



Next, determine what the middle number is for the given range.



Last, determine the location of the given number and which range number it is closest to, this is what it will be rounded to. It is rounded to 3,000

