MA.3.NSO.1.4

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

Benchmark of Focus

MA.3.NSO.1.4 : Round whole numbers from 0 to 1,000 to the nearest 10 or 100.

Example: The number 775 is rounded to 780 when rounded to the nearest 10.

Example: The number 745 is rounded to 700 when rounded to the nearest 100.

Related Benchmark/Horizontal Alignment

- MA.3.NSO.1.3
- MA.3.NSO.2.1

Vertical Alignment

Previous Benchmarks

- MA.2.NSO.1.4

Next Benchmarks

- MA.4.NSO.1.4

Terms from the K-12 Glossary

- number line
- whole numbers

Purpose and Instructional Strategies

The purpose of this benchmark is for students to use place value understanding to explain and reason about rounding. It is important for students to have numerous experiences using a number line, a place-value chart and a hundred chart to support their work with rounding to assist with their understanding of knowing when and why to round numbers providing opportunities to investigate and explore place value (K12.MTR.2.1). This benchmark continues instruction of rounding from Grade 2, where students rounded numbers from 0 to 100 to the nearest 10 (MA.2.NSO.1.4).

- Instruction of rounding should include place value representations (e.g., base ten blocks) and number lines (both horizontal and vertical) (K12.MTR.2.1).
- Students should identify benchmarks based on place value to justify rounding. For example, when rounding 643 to the nearest ten, students should use place value to determine that 643 falls between the benchmark tens, 640 and 650. Between 640 and 650, a number line shows that 643 is closer to 640 than 650. When rounding 643 to the nearest hundred, students should use place value to determine that 643 is between the benchmark

hundreds, 600 and 700. Between 600 and 700, 643 is closer to 600 than 700 (K12.MTR.2.1, K12.MTR.3.1).

- During instruction have students practice identifying possible answers and halfway points. In addition to, understanding that, by rule, if a number is exactly at the halfway point of two possible answers, the number is rounded up. For example, students learn the convention that when the value to the right of the rounded place value is 5, they round up to the greater of the two benchmark values. For example, when rounding 765 to the nearest ten, 765 is the same distance between 760 and 770. The rounding convention tells us to round up to 770 (K12.MTR.2.1, K12.MTR.3.1).
- Rounding numbers is a skill that helps students estimate reasonable solutions when adding or subtracting. Instruction of rounding skills should be taught within the context of estimating while adding or subtracting. Rounding numbers in an expression should be done before performing operations to estimate reasonable sums or differences. Rounding sums and differences 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

- Students can confuse the place value to which they are rounding. For example, students mistakenly round 923 to 900 when rounding to the nearest ten because they observe 2 tens and round to 900, instead of using the ones value of 3 to help them determine that 923 is closest to 920). The use of benchmarks numbers and number lines helps students understand rounding conceptually.
- Students assume numbers that are already located at benchmarks cannot be rounded. For example, students think that 920 cannot be rounded to the nearest ten.
- 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.

Strategies to Support Tiered Instruction

- Instruction includes using number lines, benchmark numbers and place value understanding to round numbers to the nearest ten and hundred. To develop a conceptual understanding of rounding, such as what the benchmarks are, students use place value understanding to round numbers without instruction using mnemonics, rhymes or songs.
  - For example, students round 439 to the nearest hundred using a number line and place value understanding. The teacher explains that the endpoints of our number line will be represented using hundreds, because we are rounding to the nearest hundred. The teacher then explains that there are 4 hundreds in the number 439 and one more hundred would be 5 hundreds and represents these

endpoints on the number line as 4 *hundreds* (400) and 5 *hundreds* (500). Next, the teacher explains that the mid-point on the number line can be labeled as 4 hundreds and 5 tens (450). This midpoint is halfway between 400 and 500. The teachers ask students to plot 439 on the number line and discuss if it is closer to 400 or 500. Then, explains that 439 rounds to 400 because it is 61 units away from 500 and only 39 units away from 400.
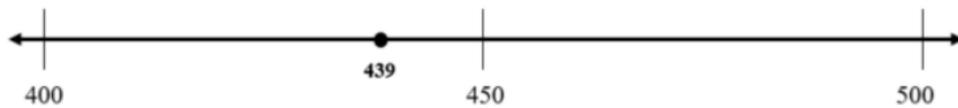
o   For example, students round 76 to the nearest ten using a number line and place value understanding. The teacher explains that the endpoints of the number line will be represented using tens, because we are rounding to the nearest ten. Then, the teacher explains that there are 7 *tens* in the number 76 and one more *ten* would be 8 *tens* and represents these endpoints on the number line as 7 *tens* (70) and 8 *tens* (80). The mid-point on the number line can be labeled as 7 *tens* and 5 *ones* (75). This midpoint is halfway between 70 and 80. The teacher asks students to plot 76 on the number line and discuss if it is closer to 70 or 80. Then, explains that 76 rounds to 80 because it is 6 *units* away from 70 and only 4 *units* away from 80. Once students master this concept, there should be a discussion about rounding the number 75 where the choice is made to round it up to 80.
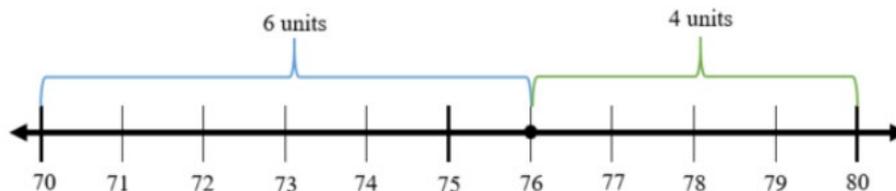
Questions to ask students:

How do you determine the benchmarks when rounding to the nearest 10? to the nearest 100?
- Students should explain that the place value being rounded to is how you will skip count to determine the benchmarks. When rounding to the nearest ten your benchmarks will be a multiple of 10. When rounding to the nearest hundred your benchmark will be a multiple of 100.

What is the midpoint when rounding to the nearest 10? to the nearest 100?
- Students should be able to explain that the midpoint is halfway between the benchmarks when counting. (Use 0 and 10 and 0 and 100 for reference) The midpoint when rounding to the nearest ten between 0 and 10 is 5, the midpoint when rounding to the nearest 100 between 0 and 100 is 50.

Round 867 to the nearest ten. To the nearest hundred. Use a number line to prove your answers.
- Sample answer that demonstrates understanding: Students correctly creates a number line that identifies the endpoints 860 and 870, midpoint of 865 and identifies that the

point 867 is past the midpoint which makes it closer and rounds to 870. Then identifies the endpoints of 800 and 900, with the midpoint of 850. Again, the number 867 is past the midpoint so would round to 900.

Instructional Tasks

Instructional Task 1

Part A: Emily is thinking of a mystery number that rounds to 350 when rounded to the nearest ten and 300 when rounded to the nearest hundred. Could Emily's number be 344? Why or why not?

Part B: Give two numbers that could be Emily's mystery number. Justify your answer using a number line.

Instructional Items

Instructional Item 1
Identify all the true statements.302 rounded to the nearest ten is 300.

a. 302 rounded to the nearest ten is 310.

b. 302 rounded to the nearest hundred is 300.

c. 493 rounded to the nearest ten is 500.

d. 493 rounded to the nearest ten is 490.

e. 493 rounded to the nearest hundred is 500.

Achievement Level Descriptors

Benchmark	Context	Assessment Limits
MA.3.NSO.1.4 Round whole numbers from 0 to 1,000 to the nearest 10 or 100. Example: The number 775 is rounded to 780 when rounded to the nearest 10. Example: The number 745 is rounded to 700 when rounded to the nearest 100.	Both	Given values are limited to whole numbers between 101 and 1,000.

ALD 2	ALD 3	ALD 4	ALD 5
rounds a three-digit number to the nearest 10.	rounds whole numbers from 0 to 1,000 to the nearest 100.	rounds whole numbers from 0 to 1,000 to the nearest 10 or 100.	N/A

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.