MA.5.NSO.2.3

Overarching Standard: MA.5.NSO.2 *Add, subtract, multiply and divide multi-digit numbers.*

Benchmark of Focus

MA.5.NSO.2.3: Add and subtract multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency.

Related Benchmark/Horizontal Alignment

- MA.5.NSO.1.5
- MA.5.AR.2.1/2.2/2.3
- MA.5.M.2.1
- MA.5.GR.2.1

Vertical Alignment

Previous Benchmarks
- MA.4.NSO.2.6/2.7

Next Benchmarks
- MA.6.NSO.2.3

Terms from the K-12 Glossary

- Equation
- Expression

Purpose and Instructional Strategies

The purpose of this benchmark is for students to add and subtract multi-digit numbers with decimals to the thousandths with procedural fluency. In Grade 4 (MA.4.NSO.2.7), students explored the addition and subtraction of multi-digit numbers with decimals to hundredths usingmoney and manipulatives. In Grade 6, students add and subtract positive fractions with procedural fluency.

- To demonstrate procedural fluency, students may choose the standard algorithm

  that works best for them and demonstrates their procedural fluency. A standard algorithmis a method that is efficient and accurate. (MTR.3.1)
- When students use a standard algorithm, they should be able to justify why it works conceptually. Teachers can expect students to demonstrate how their algorithm works, forexample, by comparing it to another method for addition and subtraction. (MTR.6.1)
- Along with using a standard algorithm, students should estimate reasonable solutions before solving. Estimation helps students anticipate possible answers and evaluate whether their solutions make sense after solving.

Common Misconceptions or Errors

- Students can make computational errors while using standard algorithms when they cannot reason why their algorithms work. In addition, they can struggle to determine where or why that computational mistake occurred because they did not estimate reasonable values for intermediate outcomes as well as for the final outcome. During instruction, teachers should expect students to justify their work while using their chosenalgorithms and engage in error analysis activities to connect their understanding to the algorithm.

Questions to ask students:

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

- Sample answer that indicates understanding: *When I build decimal values with base ten blocks it helps me to see that I need ten of any place value position to regroup whether I'm adding or subtracting. For example, ten tenths to make 1 whole.*

Ask a student that is connecting the standard algorithm for addition/subtraction of whole numbers to work with decimals why it is important that they line up the place values of the digits.

- 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.*
- Sample answer that indicates an incomplete understanding or misconception: *It is the first step to line up the decimal point.*

Ask a student to find the difference of 38.605 and 27.947.

- Sample answer that indicates understanding: *the difference is 10.658, I had to regroup in the hundredths place, tenths place and the ones place in order to find the difference.*

Ask a student to find the sum of 38.605 and 27.947.

- Sample answer that indicates understanding: *the sum is 66.552, I had to regroup in the thousandths place, tenths place and the ones place in order to find the sum.*

Instructional Tasks

Instructional Task 1

Use a standard algorithm to find the difference of eight hundred two and forty-six thousandths and three hundred and nine tenths. Explain how you use your algorithm to subtract.

Instructional Items

Instructional Item 1

Find the sum and difference of 8.72 and 3.032.

Achievement Level Descriptors

Benchmark	Context	Assessment Limits
MA.5.NSO.2.3 Add and subtract multi-digit numbers with decimals to the thousandths, including using a standard algorithm with procedural fluency.	Mathematical	Items must contain at least one multi-digit number with a decimal to the thousandths.

ALD 2	ALD 3	ALD 4	ALD 5
N/A	adds and subtracts multi-digit numbers with decimals to the hundredths including using a standard algorithm.	adds and subtracts multi-digit numbers with decimals to the thousandths, using a standard algorithm with procedural fluency.	identifies an error and adds and subtracts multi-digit numbers with decimals to the thousandths, using a standard algorithm with procedural fluency.

Additional Resources:

CPALMS

Khan Academy Subtracting Whole Numbers with Decimals

Khan Academy Adding Whole Numbers with Decimals

Resources/Tasks to Support Your Child at Home:

Adding Decimal Games

Subtracting Decimal Games