SAU 50
Grade 5
Mathematics
Operations and Algebraic Thinking
Numbers and Operations in Base 10

Operations: perform operations with fractions and decimals.

Algebraic Thinking: analyze patterns and write numerical expressions.

SAU 50 District Competency:

Students will independently use their learning to choose and use the efficient format to express equivalency in a given situation.

Essential Questions

- Why does the order matter?
- How can rules with numbers be arranged to always get a predictable answer?

Acquisition

Students will demonstrate the following to meet the standards.

- I can use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- I can write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*
- I can explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- I can read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).
- I can compare two decimals to the thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
- I can use place value understanding to round decimals to any place.
- I can fluently multiply multi-digit whole numbers using the standard algorithm.

- I can use the explain strategies when dividing four-digit numbers by two-digit numbers.
- I can add, subtract, multiply and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Standards

NH College and Career Ready Standards

Key to Standard Notation:

5.OA.1: 5 *(grade level)* **OA** *(domain: Operations and Algebraic Thinking)* **NBT** *(domain: Numbers and Operations in Base 10)* **1** *(number of the standard)*

Operations and Algebraic Thinking

Write and interpret numerical expressions.
5.OA.1: Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
5.OA.2: Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

Numbers and Operations in Base Ten
Understand the place value system.
5.NBT.1: Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
5.NBT.2: Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
5.NBT.3: Read, write, and compare decimals to thousandths.
5.NBT.3.a: Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.
5.NBT.3.b: Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
5.NBT.4: Use place value understanding to round decimals to any place.

Perform operations with multi-digit whole numbers and with decimals to hundredths.
5.NBT.5: Fluently multiply multi-digit whole numbers using the standard algorithm.
5.NBT.6: Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division,. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
5.NBT.7: Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship

between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

New Hampshire College and Career Ready Standards

References:

National Governors Association Center for Best Practices, Council of Chief State School Officers. (2010). *Common Core Standards for Mathematics* (United States, National Governors Association Center for Best Practices, Council of Chief State School Officers). Retrieved August 10, 2016, from http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf

Math is fun/definitions. (n.d.). Retrieved April 17, 2017, from http:/www.mathisfun.com/definitions