Examples of K-8 math standards from NC (common core) and Minnesota

The Minnesota standards are organized differently than the NC standards. The NC standards are listed, for example, as 8.SP.4. 8 is the grade, SP is the strand and 4 is the 4th standard in the strand. Minnesota uses the notation, for example, 3.1.2.3 which means the 3rd grade, the first strand, the second standard and the 3rd "benchmark" or substandard. Also, the order of presentation of topics is not quite the same. Thus it is hard to find a one to one correspondence between the standards for direct comparison. However, we shall give a few examples.

Example 1.
NC 6.SP.5
Summarize numerical data sets in relation to their context, such as by:
a. Reporting the number of observations.
b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

Minnesota 5.4.1.1, 5.4.1.2
Standard: 1
Display and interpret data; determine mean, median and range.

Benchmark: 1
Know and use the definitions of the mean, median and range of a set of data. Know how to use a spreadsheet to find the mean, median and range of a data set. Understand that the mean is a "leveling out" of data.
For example: The set of numbers 1, 1, 4, 6 has mean 3. It can be leveled by taking one unit from the 4 and three units from the 6 and adding them to the 1s, making four 3s.
Benchmark 2
Create and analyze double-bar graphs and line graphs by applying understanding of whole numbers, fractions and decimals. Know how to create spreadsheet tables and graphs to display data.

Note: is typical for Minnesota to defer difficult topics to high school, and to keep topics simple in lower grades. Also note that the benchmarks break up the standards into simpler pieces.

Example 2. We give examples of how the arithmetic of fractions are treated.
NC 5.NF.4
Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
a. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show* $(2/3) \times 4 = 8/3$, *and create a story contextfor this equation. Do the same with* $(2/3) \times (4/5) = 8/15$. *(In general,* $(a/b) \times (c/d) = ac/bd$.*)*
b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

NC 5.NF.7

Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Note: Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.)

a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.*

b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷(1/5) = 20 because 20 × (1/5) = 4.*

c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*

Minnesota 5.1.3.1, 2, 3, 4

Standard: 3

Add and subtract fractions, mixed numbers and decimals to solve real-world and mathematical problems

Benchmark 1

Add and subtract decimals and fractions, using efficient and generalizable procedures, including standard algorithms.

Benchmark 2

Model addition and subtraction of fractions and decimals using a variety of representations.

For example: Represent $2/3 + 1/4$ and $2/3 + 1/4$ by drawing a rectangle divided into 4 columns and 3 rows and shading the appropriate parts or by using fraction circles or bars.

Benchmark 3

Estimate sums and differences of decimals and fractions to assess the reasonableness of results.

For example: Recognize that $12\frac{2}{5} - 3\frac{3}{4}$ is between 8 and 9 (since $2/5 < 3/4$).

Benchmark 4

Solve real-world and mathematical problems requiring addition and subtraction of decimals, fractions and mixed numbers, including those involving measurement, geometry and data.

For example: Calculate the perimeter of the soccer field when the length is 109.7 meters and the width is 73.1 meters.

6.1.3.1, 2, 3, 4

Standard 3

Multiply and divide decimals, fractions and mixed numbers; solve real-world and mathematical problems using arithmetic with positive rational numbers.

Benchmark 1

Multiply and divide decimals and fractions, using efficient and generalizable procedures, including standard algorithms.

Benchmark 2

Use the meanings of fractions, multiplication, division and the inverse relationship between multiplication and division to make sense of procedures for multiplying and dividing fractions.

For example: Just as $12/4 = 3$ means $12 = 3 \times 4$, $2/3 \div 4/5 = 5/6$ means $5/6 \times 4/5 = 2/3$.

Benchmark 3

Calculate the percent of a number and determine what percent one number is of another number to solve problems in various contexts.

For example: If John has $45 and spends $15, what percent of his money did he keep?

Benchmark 4

Solve real-world and mathematical problems requiring arithmetic with decimals, fractions and mixed numbers.

Benchmark 5

Estimate solutions to problems with whole numbers, fractions and decimals and use the estimates to assess the reasonableness of results in the context of the problem.
For example: The sum $1/3 + 0.25$ can be estimated to be between $1/2$ and 1, and this estimate can be used to check the result of a more detailed calculation.