

FOURTH GRADE MATHEMATICS

Priority Standard 1: Represent and Understand Multiplication and Division

Understand multiplication as comparison (4.OA.1-2). Use strategies based on place value and the properties of operations to multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers (4.NBT.5). Use strategies based on place value, the properties of operations, and the relationship between multiplication and division to divide up to four-digit dividends and one-digit divisors (4.NBT.6).

0 Not Covered

1	<ul style="list-style-type: none"> Understand multiplication as combining equal groups of objects. Understand division is partitioning into equal groups. Compute simple multiplication and division problems.
2	<ul style="list-style-type: none"> Use language of “more than” and “times as many” to distinguish the difference between additive comparisons and multiplicative comparisons. Write multiplication equations from multiplicative comparison situations. Represent multiplicative comparisons using a variety of models and strategies. Understand how to compute products of one-digit numbers and multiples of 10, 100, and 1,000. Explain the pattern when multiplying by a value of 10, 100, or 1,000. Demonstrate understanding of the relationships between pictures and/or equations representing multiplying and dividing whole numbers. Understand remainders as the quantity remaining when the divisor does not divide equally into the dividend.
3	<ul style="list-style-type: none"> Recognize that any two factors and their product can be read as a comparison (8 is 4 times as many as 2, or 2 times as many as 4 is 8) Extend understanding of multiplication with one-digit numbers to multiply specified multi-digit numbers. Use the distributive property to decompose numbers into multiples of 10, 100, and 1,000 and multiply those multiples by one-digit numbers to find products. Demonstrate a variety of strategies to multiply the following numbers: one-digit number by up to four-digit number. Use a variety of strategies to find quotients between the following numbers with and without remainders and including zeros in various places: one-digit divisors and up to four-digit dividends. Interpret whole-number quotients of whole numbers with and without remainders from partitive and quotative contexts (Partitive: interpret $560 \div 8$ as the number of objects in each share when 560 objects are partitioned equally into eight shares; Quotative: interpret $560 \div 8$ as a number of shares when 560 objects are partitioned into equal shares of eight objects each) Justify understanding of the relationships with multiplication and division using concrete models, pictures, and/or equations. Interpret remainders by determining when it makes sense to round up, discard, or further partition the remainder.



Priority Standard 2: Develop Understanding of Fractions

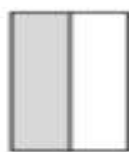
In fourth grade, denominators extend to include 5,10,12, and 100. Students continue to work with equivalence by reasoning about the number and size of the parts (4.NF.1) and compare two fractions with different numerators and different denominators (4.NF.2). Understand fractions as sums of unit fractions. Add and subtract fractions and mixed numbers with like denominators (4.NF.3). Multiply a fraction by a whole number (4.NF.4). Understand decimal notation to the hundredths and compare decimal fractions with denominators of 10 and 100 (4.NF.5-7).

0 Not Covered

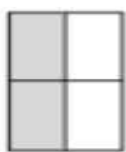
- 1**
- Understand comparisons are only valid when the two fractions or decimals refer to the same whole.
 - Represent a repeated addition expression with unit fractions as a multiplication expression with a whole number and a unit fraction.
 - Represent a fraction with a denominator of 10 or 100 using visual models.

- 2**
- Find equivalent fractions without understanding why the process works.
 - Compare fractions through creating common denominators.
 - Represent a non-unit fraction as an expression of a unit fraction multiplied by a whole number.
 - Add fractions with denominators of 10 and 100.
 - Compare decimals to hundredths.

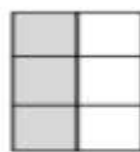
- 3**
- Recognize and explain how multiplying the numerator and denominator of a fraction by the same number, n, corresponds physically to partitioning each unit fraction piece into n smaller equal pieces. Justify with models.



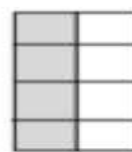
$$\frac{1}{2}$$



$$\frac{2}{4} = \frac{2 \times 1}{2 \times 2}$$



$$\frac{3}{6} = \frac{3 \times 1}{3 \times 2}$$



$$\frac{4}{8} = \frac{4 \times 1}{4 \times 2}$$

- Compare a fraction to a benchmark fraction and justify through communication and models.
- Compare fractions by reasoning that as the number of equal parts in a whole (denominator) increases, the size of the fractional parts decreases and that as the number of equal parts being considered (numerator) increases, the total amount being considered increases.
- Understand a non-unit fraction (a fraction with a numerator greater than one) as a multiple of a unit fraction and a whole number.
- Understand and represent that addition and subtraction of fractions with the same denominator is joining or separating equal-sized parts referring to the same whole.
- Understand a mixed number is composed of a whole number and a fraction and is a number that can be represented as a fraction greater than one.
- Use strategies to add and subtract fractions, including mixed numbers with like denominators.
- Solve word problems involving addition and subtraction of fractions with like denominators.
- Understand a multiple of a non-unit fraction is equivalent to a unit fraction times a whole number.
- Solve word problems involving multiplication of a fraction and a whole number.
- Represent fractions with denominators of tenths or hundredths as decimals.
- Represent equivalent fractions with denominators of 10 and 100.
- Understand decimal notation to the hundredths and compare two numbers to the hundredths by reasoning about their size.



Priority Standard 3: Generalize and Use Place Value Understanding

Students extend understanding of place value to 1,000,000 understanding the relative sizes of numbers in each place (4.NBT.1-2). Fluently add and subtract multi-digit whole numbers using the standard algorithm (4.NBT.4).

0	Not Covered
1	<ul style="list-style-type: none"> Understand the places of numbers and the value of each place. Recall basic addition and subtraction facts.
2	<ul style="list-style-type: none"> Express a given number up to 100 in multiple ways. Fluently add and subtraction multi-digit numbers without regrouping. Line up numbers by place value and describe the place value of each digit to compare the numbers. Use the symbols $>$, $=$, and $<$ to correctly compare multi-digit numbers
3	<ul style="list-style-type: none"> Understand and model place value relationships showing how a digit in one place represents ten times what it represents in the place to its right (Use manipulatives such as place value blocks, mats, discs, etc.) Understand that the value of each place is ten times less than the place to the left. Express a given number in multiple ways: base-ten numerals (42,371), base-ten word form (4 ten thousands, 2 thousands, 3 hundreds, 7 tens, and 1 one), number names (forty-two thousand, three hundred seventy-one), and expanded form ($40,000 + 2,000 + 300 + 70 + 1$) Understand that when comparing two numbers can look at individual value of the digit. Understand the role of commas when reading a whole number. Understand that if the number of thousands is the same, the number with more hundreds is greater. If the number of thousands and hundreds is the same, the number with more tens is greater. Use terms including greater than, more than, less than, fewer than, equal to, and same as, to describe comparisons. Fluently compute sums and differences of whole numbers with regrouping using a variety of strategies including the standard algorithm Use properties of operation and place value to explain the standard algorithm. Build understanding and explain connections between various addition and subtraction strategies and the standard algorithm.

