SECTION SEVEN: Draft 4th Grade Standards

7A: Introduction

Critical Areas for Grade 4 Mathematics

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication, and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators, and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and symmetry.

1. Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value, and properties of operations, in particular the distributive property, as they develop, discuss, and use efficient, accurate, and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations; and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations, and the relationship of division to multiplication as they develop, discuss, and use efficient, accurate, and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients, and interpret remainders based upon the context.

2. Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., 15/9 = 5/3), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions, and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

3. Students describe, analyze, compare, and classify two-dimensional shapes. Through building, drawing, and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

Grade K Overview

Operations and Algebraic Thinking

- Use the four operations with whole numbers to solve problems.
- Gain familiarity with factors and multiples.
- Generate and analyze patterns.

Number and Operations in Base Ten

- Generalize place value understanding for multi-digit whole numbers.
- Use place value understanding and properties of operations to perform multi-digit arithmetic.

Number and Operations—Fractions

- Extend understanding of fraction equivalence and ordering.
- Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.
- Understand decimal notation for fractions, and compare decimal fractions.

Measurement and Data

- Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.
- Represent and interpret data.
- Geometric measurement: understand concepts of angle and measure angles.

Geometry

- Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Mathematical Practices

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Highlights of Major Work in Grades K-8

K-2:	Addition and subtraction – concepts, skills, and problem solving; place value
3-5:	Multiplication and division of whole numbers and fractions – concepts, skills, and problem solving
6:	Ratios and proportional relationships; early expressions and equations
7:	Ratios and proportional relationships; arithmetic of rational numbers
8:	Linear algebra and linear functions

Grade 4 Fluency Standard(s)

4.NBT.B.4	Add/subtract within 1,000,000

7B: Draft Standards Statements – Grade 4

The standards listed in the tables below list both core standards statements and cluster prioritization for K-8 mathematics. Not all content in a given grade is emphasized equally in the Standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. (Link to Focus by Grade Level documents)

Students should spend the large majority of their time on the major work of the grade (■). Supporting work (□) and, where appropriate, additional work (○) can engage students in the major work of the grade.

4.OA - Operations & Algebraic Thinking

4.OA.A - Use the four operations with whole numbers to solve problems. ■

Standard	Standards Statement (Jan 2021 Draft)
4.OA.A.1	Interpret a multiplication equation as a comparison of quantities. Represent verbal statements of multiplicative comparisons as equations.
4.OA.A.2	Multiply or divide to solve word problems in authentic contexts involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison.
4.OA.A.3	Solve multistep word problems in authentic contexts using whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted.

4.OA.B - Gain familiarity with factors and multiples. □

Standard	Standards Statement (Jan 2021 Draft)
4.OA.B.4	Find all factor pairs for a whole number in the range 1-100. Determine whether a given whole number in the range of 1-100 is a multiple of a given one-digit number, and prime or composite.

4.OA.C - Generate and analyze patterns. ○

Standard	Standards Statement (Jan 2021 Draft)
4.OA.C.5	Analyze a number, visual, or contextual pattern that follows a given rule.

4.NBT - Number & Operations in Base Ten

4.NBT.A - Generalize place value understanding for multi-digit whole numbers. ■

Standard	Standards Statement (Jan 2021 Draft)
4.NBT.A.1	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
4.NBT.A.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Use understandings of place value within these forms to compare two multi-digit numbers using >, =, and < symbols.
4.NBT.A.3	Use place value understanding to round multi-digit whole numbers to any place.

4.NBT.B - Use place value understanding and properties of operations to perform multi-digit arithmetic.

Standard	Standards Statement (Jan 2021 Draft)
4.NBT.B.4	Demonstrate fluency with addition and subtraction of multi-digit whole numbers using accurate, efficient, and flexible strategies and algorithms based on place value and properties of operations.
4.NBT.B.5	Use various representations and strategies to multiply a whole number of up to four digits by a one-digit number, and a two-digit number by a two-digit number using strategies based on place value and the properties of operations.
4.NBT.B.6	Use various representations to find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.

4.NF - Number & Operations - Fractions

4.NF.A - Extend understanding of fraction equivalence and ordering.

Standard	Standards Statement (Jan 2021 Draft)
4.NF.A.1	Use visual fraction representations to recognize, generate, and explain relationships between equivalent fractions.
4.NF.A.2	Compare two fractions with different numerators and different denominators, record the results with the symbols >, =, or <, and justify the conclusions.

4.NF.B - Build fractions from unit fractions.

Standard	Standards Statement (Jan 2021 Draft)
4.NF.B.3	Understand a fraction (a/b) as the sum (a) of fractions of the same denominator (1/b). Solve word problems in authentic contexts involving addition and subtraction of fractions referring to the same whole and having like denominators.
4.NF.B.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Represent and solve word problems in authentic contexts involving multiplication of a fraction by a whole number.

4.NF.C - Understand decimal notation for fractions, and compare decimal fractions.

Standard	Standards Statement (Jan 2021 Draft)
4.NF.C.5	Connect representations of equivalent fractions to fractions with denominators of 10 and 100, and use these representations to understand and use these representations to add two fractions with denominators of 10 and 100.
4.NF.C.6	Use and interpret decimal notation for fractions with denominators 10 or 100.
4.NF.C.7	Use decimal notation for fractions with denominators 10 or 100. Compare two decimals to hundredths place by reasoning about their size, and record the comparison using the symbols >, =, or <.

4.MD - Measurement & Data

4.MD.A - Solve problems involving measurement and conversion of measurements.

Standard	Standards Statement (Jan 2021 Draft)
4.MD.A.1	Know relative sizes of measurement units and express measurements in a larger unit in terms of a smaller unit.
4.MD.A.2	Apply knowledge of relative size of measurement units, simple fractions or decimals, and the four operations to solve word problems in authentic contexts.
4.MD.A.3	Apply the area and perimeter formulas for rectangles in authentic contexts and mathematical problems

4.MD.B - Represent and interpret data.

Standard	Standards Statement (Jan 2021 Draft)
4.MD.B.4	Build and investigate line plots that display data sets of fractional measurements with the same denominator. Use the data display to answer questions involving addition and subtraction of the fractional measurements.

4.MD.C - Geometric measurement: understand concepts of angle and measure angles.

Standard	Standards Statement (Jan 2021 Draft)
4.MD.C.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint. Understand and apply concepts of angle measurement.
4.MD.C.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
4.MD.C.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts.

4.G - Geometry

4.G.A -Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Standard	Standards Statement (Jan 2021 Draft)
4.G.A.1	Draw points, lines, line segments, rays, angles and perpendicular and parallel lines. Identify these in two-dimensional figures.
4.G.A.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size.
4.G.A.3	Recognize and draw a line of symmetry for a two dimensional figure.

7C: Grade 4 Crosswalk with Clarifying Guidance

CLUSTER: 4.OA.A - Use the four operations with whole numbers to solve problems.

STANDARD: 4.OA.A.1

DRAFT Standards Statement (JAN 2021):

Interpret a multiplication equation as a comparison of quantities. Represent verbal statements of multiplicative comparisons as equations.

DRAFT Clarifying Guidance (JAN 2021):

Connection to MPs:

MP6 - understand the statement 35 = 5 x 7 as 35 is the same value as 5 times as many as 7 and 7 times as many as 5.

MP2 - Represent verbal statements of multiplicative comparisons as multiplication equations.

Original CCSS Text (2010):

Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

STANDARD: 4.OA.A.2

DRAFT Standards Statement (JAN 2021):

Multiply or divide to solve word problems in authentic contexts involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison.

DRAFT Clarifying Guidance (JAN 2021):

Common Confusion:

Students should recognize that additive comparison refers to the difference between two numbers and multiplicative comparison refers to how much or how many times larger the bigger number is from the smaller number as a comparison.

Connection to MPs:

MP6 - Use drawings and equations with a symbol for the unknown number to represent the problem.

Original CCSS Text (2010):

Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.

STANDARD: 4.OA.A.3

DRAFT Standards Statement (JAN 2021):

Solve multistep word problems in authentic contexts using whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted.

DRAFT Clarifying Guidance (JAN 2021):

Example:

"How many busses are needed to transport 250 students, if each bus holds 36 students?" In which the remainder of 34 would be interpreted to include an additional bus.

Connection to MPs:

MP2 - Interpret and use remainders, and assess the reasonableness of answers using mental computation and estimation strategies.

MP4 - Represent these problems using equations with a letter standing for the unknown quantity.

MP6 - Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Original CCSS Text (2010):

Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

CLUSTER: 4.OA.B- Gain familiarity with factors and multiples.

STANDARD: 4.OA.B.4

DRAFT Standards Statement (JAN 2021):

Find all factor pairs for a whole number in the range 1-100. Determine whether a given whole number in the range of 1-100 is a multiple of a given one-digit number, and prime or composite.

DRAFT Clarifying Guidance (JAN 2021):

Example:

The factors of 24 are 1, 2, 3, 4, 6, 8, 12 and 24.

Connection to MPs:

MP8 - Recognize that a whole number is a multiple of each of its factors (e.g., 24 is a multiple of 1, 2, 3, 4, 6, 8, 12, and 24).

Original CCSS Text (2010):

Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

CLUSTER: 4.OA.C- Generate and analyze patterns.

STANDARD: 4.OA.A.5

DRAFT Standards Statement (JAN 2021):

Analyze a number, visual, or contextual pattern that follows a given rule.

DRAFT Clarifying Guidance (JAN 2021):

Example:

Given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.

Connection to MPs:

MP3 - Identify and describe features of the rule not explicit in the rule itself.

Original CCSS Text (2010):

Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.

CLUSTER: 4.NBT.A - Generalize place value understanding for multi-digit whole numbers.

STANDARD: 4.NBT.A.1

DRAFT Standards Statement (JAN 2021):

Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.

DRAFT Clarifying Guidance (JAN 2021):

Example:

Recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.

Boundary:

Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.

Original CCSS Text (2010):

Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.

STANDARD: 4.NBT.A.2

DRAFT Standards Statement (JAN 2021):

Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Use understandings of place value within these forms to compare two multi-digit numbers using >, =, and < symbols.

DRAFT Clarifying Guidance (JAN 2021):

Connection to MPs:

MP2 - Make connections across representations of multi-digit whole numbers using base ten numerals, number names, and expanded form.

MP7 - Develop rules for comparing the multi-digit numbers.

Boundary:

Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.

Original CCSS Text (2010):

Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

STANDARD: 4.NBT.A.3

DRAFT Standards Statement (JAN 2021):

Use place value understanding to round multi-digit whole numbers to any place.

DRAFT Clarifying Guidance (JAN 2021):

Common Confusion:

Students rounding to 348 to the nearest hundred may mistakenly round initially to 350 and then 400 by applying rules such as if the digit is 0-4 then round down and 5-9 and round up. Models can help them see that 348 is closer to 300 than 400.

Boundary:

Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.

Original CCSS Text (2010):

Use place value understanding to round multi-digit whole numbers to any place.

CLUSTER: 4.NBT.B - Use place value understanding and properties of operations to perform multi-digit arithmetic.

STANDARD: 4.NBT.B.4

DRAFT Standards Statement (JAN 2021):

Demonstrate fluency with addition and subtraction of multi-digit whole numbers using accurate, efficient, and flexible strategies and algorithms based on place value and properties of operations.

DRAFT Clarifying Guidance (JAN 2021):

Note:

Students should use efficient algorithms that make sense for the given numbers and draw upon their understanding of multi-digit whole numbers, the properties of operations, and place value.

Boundary:

Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1, 000,000. A range of algorithms may be used.

Original CCSS Text (2010):

Fluently add and subtract multi-digit whole numbers using the standard algorithm.

STANDARD: 4.NBT.B.5

DRAFT Standards Statement (JAN 2021):

Use various representations and strategies to multiply a whole number of up to four digits by a one-digit number, and a two-digit number by a two-digit number using strategies based on place value and the properties of operations.

DRAFT Clarifying Guidance (JAN 2021):

Illustrate and explain calculations using rectangular arrays, area models, and/or equations, along with strategies based on place value and properties of operations.

Example:

Connect numeric and visual models such as those created by representing 285 with base 10 pieces and repeating three times. Use this area model with dimensions of 285 and 3 to find partial products.

Connecting to MPs:

MP3 - Illustrate and explain the calculation using equations, rectangular arrays and /or area models.

MP7 - Use expanded form of the whole number and the distributive property of multiplication to simplify calculations.

Boundary:

Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.

Original CCSS Text (2010):

Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

STANDARD: 4.NBT.B.6

DRAFT Standards Statement (JAN 2021):

Use various representations to find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division.

DRAFT Clarifying Guidance (JAN 2021):

Example:

Apply knowledge of decomposing whole numbers into divisible parts. Such as, connect numeric and visual models such as those created by representing 136 with base 10 pieces and dividing into groups of 4 or 4 groups to determine either the size of the group or the number of groups; or building/sketching a rectangle with an area of 136 and one dimension of 4 and finding partial quotients.

Connection to MPs:

MP3 - Illustrate and explain the calculation using equations, rectangular arrays and /or area models.

Boundary:

Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.

Original CCSS Text (2010):

Find whole-number quotients and remainders with up to four-digit dividends and one-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.

CLUSTER: 4.NF.A - Extend understanding of fraction equivalence and ordering.

STANDARD: 4.NF.A.1

DRAFT Standards Statement (JAN 2021):

Use visual fraction representations to recognize, generate, and explain relationships between equivalent fractions.

DRAFT Clarifying Guidance (JAN 2021):

Connection to MPs:

MP3 - Use visual models to justify why a fraction a/b is equivalent to a fraction (n × a)/(n × b) with attention to how the number and size of the parts differ even though the two fractions themselves are the same size.

Boundary:

Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, 100.

Original CCSS Text (2010):

Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

STANDARD: 4.NF.A.2

DRAFT Standards Statement (JAN 2021):

Compare two fractions with different numerators and different denominators, record the results with the symbols >, =, or <, and justify the conclusions.

DRAFT Clarifying Guidance (JAN 2021):

Connection to MPs:

MP2 - Recognize that comparisons are valid only when the two fractions refer to the same whole.

MP3 - Justify using conceptual and procedural strategies. Conceptual strategies should include using visual models; comparing benchmark fractions such as 0, ½, 1; and attending to the size of the piece for the like numerators or number of pieces for like denominators. Procedural strategies should include finding a common denominator to directly compare the number of pieces.

MP6 - Record with comparison symbols >, =, or <.

Boundary:

Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, 100.

Original CCSS Text (2010):

Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

CLUSTER: 4.NF.B - Build fractions from unit fractions.

STANDARD: 4.NF.B.3

DRAFT Standards Statement (JAN 2021):

Understand a fraction (a/b) as the sum (a) of fractions of the same denominator (1/b). Solve word problems in authentic contexts involving addition and subtraction of fractions referring to the same whole and having like denominators.

DRAFT Clarifying Guidance (JAN 2021):

Extend understanding addition and subtraction to include fractions.

- Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation.
- Add and subtract mixed numbers with like denominators.

Connection to MPs:

MP2 - Decompose and recompose 3/8 as 1/8 + 1/8 + 1/8 or 1/8 + 2/8 and 2 1/8 as 1 + 1 + 1/8 or 8/8 + 8/8 + 1/8.

MP4 - Use visual fraction models and equations to represent problems.

MP7 - Replace mixed numbers with equivalent fractions and/or use properties of operations and the relationship between addition and subtraction to solve problems.

Boundary:

Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, 100.

Original CCSS Text (2010):

Understand a fraction a/b with a > 1 as a sum of fractions 1/b.

4.NF.B.3.A *Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.*

4.NF.B.3.B *Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.*

4.NF.B.3.C *Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.*

4.NF.B.3.D *Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.*

STANDARD: 4.NF.B.4

DRAFT Standards Statement (JAN 2021):

Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. Represent and solve word problems in authentic contexts involving multiplication of a fraction by a whole number.

DRAFT Clarifying Guidance (JAN 2021):

Extend understanding multiplication to include fractions.

- Understand a fraction a/b as a multiple of 1/b.
- Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number.

Connection to MPs:

MP2 - Use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).

MP3 - Use a visual fraction model to demonstrate 3 × (2/5) is the same as 6 × (1/5), recognizing this product as 6/5. Justify the general idea n × (a/b) = (n × a)/b.

Boundary:

Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.

Original CCSS Text (2010):

Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

4.NF.B.4.A *Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*

4.NF.B.4.B *Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*

4.NF.B.4.C *Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*

CLUSTER: 4.NF.C - Understand decimal notation for fractions, and compare decimal fractions.

STANDARD: 4.NF.C.5

DRAFT Standards Statement (JAN 2021):

Connect representations of equivalent fractions to fractions with denominators of 10 and 100, and use these representations to understand and use these representations to add two fractions with denominators of 10 and 100.

DRAFT Clarifying Guidance (JAN 2021):

Connection to MPs:

MP7 - Express 3/10 as 30/100 and add 3/10 + 4/100 = 34/100.

Boundary:

Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12 and 100.

NOTE:

Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.

Original CCSS Text (2010):

Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express 3/10 as 30/100 and add 3/10 + 4/100 = 34/100. (Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.) (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

STANDARD: 4.NF.C.6

DRAFT Standards Statement (JAN 2021):

Use and interpret decimal notation for fractions with denominators 10 or 100.

DRAFT Clarifying Guidance (JAN 2021):

Example:

Rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.

Boundary:

Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, 100.

Original CCSS Text (2010):

Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.

STANDARD: 4.NF.C.7

DRAFT Standards Statement (JAN 2021):

Use decimal notation for fractions with denominators 10 or 100. Compare two decimals to hundredths place by reasoning about their size, and record the comparison using the symbols >, =, or <.

DRAFT Clarifying Guidance (JAN 2021):

Connection to MPs:

MP2 - Recognize that comparisons are valid only when decimals refer to the same whole.

MP6 - Record with comparison symbols >, =, or <.

MP3 - Justify conclusions using visual models.

Boundary:

Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12 and 100.

Original CCSS Text (2010):

Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

CLUSTER: 4.MD.A - Describe and compare measurable attributes.

STANDARD: 4.MD.A.1

DRAFT Standards Statement (JAN 2021):

Know relative sizes of measurement units and express measurements in a larger unit in terms of a smaller unit.

DRAFT Clarifying Guidance (JAN 2021):

Example:

Know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft. snake as 48 inches. Generate a conversion table for feet and inches listed as number pairs (1, 12), (2, 24), (3, 36), ….

Connection to MPs:

MP3 - Justify conversions using understanding that larger units can be partitioned into smaller equal sized units.

Boundary:

Measurement units within one system a student should be familiar with include km, m, cm, kg, g, lb, oz, l, hr, min, sec.

Original CCSS Text (2010):

Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...

STANDARD: 4.MD.A.2

DRAFT Standards Statement (JAN 2021):

Apply knowledge of relative size of measurement units, simple fractions or decimals, and the four operations to solve word problems in authentic contexts.

DRAFT Clarifying Guidance (JAN 2021):

Connections to MPs:

MP2 - Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Boundary:

Word problems should involve simple fractions or decimals and expressing measurements given in a larger unit in terms of a smaller unit. Contexts include distance, intervals of time, liquid volumes, mass and money.

Original CCSS Text (2010):

Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

STANDARD: 4.MD.A.3

DRAFT Standards Statement (JAN 2021):

Apply the area and perimeter formulas for rectangles in authentic contexts and mathematical problems.

DRAFT Clarifying Guidance (JAN 2021):

Example:

Find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

Original CCSS Text (2010):

Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

CLUSTER: 4.MD.B - Use place value understanding and properties of operations to perform multi-digit arithmetic.

STANDARD: 4.MD.B.4

DRAFT Standards Statement (JAN 2021):

Build and investigate line plots that display data sets of fractional measurements with the same denominator. Use the data display to answer questions involving addition and subtraction of the fractional measurements.

DRAFT Clarifying Guidance (JAN 2021):

Example:

From a line plot find and interpret the difference in length between the longest and shortest specimens of an insect collection.

Boundary:

Fractions include 1/2, 1/4, 1/8.

Original CCSS Text (2010):

Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

CLUSTER: 4.MD.C - Geometric measurement: understand concepts of angle and measure angles.

STANDARD: 4.MD.C.5

DRAFT Standards Statement (JAN 2021):

Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint. Understand and apply concepts of angle measurement.

DRAFT Clarifying Guidance (JAN 2021):

Understand concepts of angle measurement:

- An angle can be viewed as a wedge of a circle or a turn through a circular arc where 1/360 of the wedge or turn is one-degree.
- An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.

Original CCSS Text (2010):

Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

4.MD.C.5.A *An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.*

4.MD.C.5.B *An angle that turns through n one-degree angles is said to have an angle measure of n degrees.*

STANDARD: 4.MD.C.6

DRAFT Standards Statement (JAN 2021):

Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

DRAFT Clarifying Guidance (JAN 2021):

[no additional clarifying guidance at this time]

Original CCSS Text (2010):

Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

STANDARD: 4.MD.C.7

DRAFT Standards Statement (JAN 2021):

Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts.

DRAFT Clarifying Guidance (JAN 2021):

Expectation includes solving addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems such as by using an equation with a symbol for the unknown angle measure.

Original CCSS Text (2010):

Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

CLUSTER: 4.G.A. - Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

STANDARD: 4.G.A.1

DRAFT Standards Statement (JAN 2021):

Draw points, lines, line segments, rays, angles and perpendicular and parallel lines. Identify these in two-dimensional figures.

DRAFT Clarifying Guidance (JAN 2021):

Notes: Expectation that drawing and identifying right, acute, and obtuse angles are included in this standard.

Original CCSS Text (2010):

Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.

STANDARD: 4.G.A.2

DRAFT Standards Statement (JAN 2021):

Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size.

DRAFT Clarifying Guidance (JAN 2021):

Connection to MPs:

MP6 - Recognize and identify right triangles as a category.

Original CCSS Text (2010):

Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

STANDARD: 4.G.A.3

DRAFT Standards Statement (JAN 2021):

Recognize and draw a line of symmetry for a two dimensional figure.

DRAFT Clarifying Guidance (JAN 2021):

Note:
A line of symmetry is a line across the figure such that the figure can be folded along the line into matching parts.
Connection to MPs:
MP7 - Identify or create line-symmetric figures by drawing and testing proposed lines of symmetry and sketching the second half of a symmetrical figure.

Original CCSS Text (2010):

Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.