Wisconsin Mathematics

Grade 4

Adopted 2021

Standards for Mathematical Practice

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

Operations and Algebraic Thinking

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

1. Interpret a multiplication equation as a multiplicative comparison, e.g., interpret 35 = 5 x 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. M.4.OA.A.1
2. 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. M.4.OA.A.2
3. Solve multi-step 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. M.4.OA.A.3

B. Gain familiarity with factors and multiples. M.4.OA.B

4. 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. M.4.OA.B.4

Skip to main content

C. Generate and analyze patterns. M.4.OA.C

5. 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. M.4.OA.C.5

D. Multiply and divide within 100. M.4.OA.D

6. Flexibly and efficiently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations [e.g., knowing that 7 x 6 can be thought of as 7 groups of 6 so one could think 5 groups of 6 is 30 and 2 more groups of 6 is 12 and 30 + 12 = 42 (informal use of the distributive property)]. M.4.OA.D.6

Number and Operations in Base Ten

A. Generalize place value understanding for multi-digit whole numbers. M.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. M.4.NBT.A.1
2. 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 and describe the result of the comparison using words and symbols (>, =, and <). M.4.NBT.A.2
3. Use place value understanding to generate estimates for real-world problem situations, with multi-digit whole numbers, using strategies such as mental math, benchmark numbers, compatible numbers, and rounding. Assess the reasonableness of their estimates. (e.g., Is my estimate too low or too high? What degree of precision do I need for this situation?) M.4.NBT.A.3

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

4. Flexibly and efficiently add and subtract multi-digit whole numbers using strategies or algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. M.4.NBT.B.4
5. 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. M.4.NBT.B.5
6. 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. M.4.NBT.B.6

Measurement and Data

A. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. M.4.MD.A

Skip to main content

1. 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. M.4.MD.A.1
2. 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 a number line that feature a measurement scale. M.4.MD.A.2
3. Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. M.4.MD.A.3

B. Represent and interpret data. M.4.MD.B

4. Make a line plot to display a data set of measurements in fractions of a unit (½, ¼, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. M.4.MD.B.4

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

5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: M.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. M.4.MD.C.5.A
   b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees. M.4.MD.C.5.B
6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. M.4.MD.C.6
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. 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. M.4.MD.C.7

Geometry

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

1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. M.4.G.A.1
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. Recognize right triangles as a category, and identify right triangles. M.4.G.A.2

Skip to main content

3. 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. M.4.G.A.3

Number and Operations – Fractions

A. Extend understanding of fraction equivalence. M.4.NF.A

1. Understand fraction equivalence. M.4.NF.A.1
   a. Explain why a fraction is equivalent to another fraction by using visual fraction models (e.g., tape diagrams and number lines), with attention to how the number and the size of the parts differ even though the two fractions themselves are the same size. M.4.NF.A.1.A
   b. Understand and use a general principle to recognize and generate equivalent fractions that name the same amount. M.4.NF.A.1.B
2. Compare fractions with different numerators and different denominators while recognizing that comparisons are valid only when the fractions refer to the same whole. Justify the conclusions by using visual fraction models (e.g., tape diagrams and number lines) and by reasoning about the size of the fractions, using benchmark fractions (including whole numbers), or creating common denominators or numerators. Describe the result of the comparison using words and symbols (>, =, and <). M.4.NF.A.2

B. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. M.4.NF.B

3. Understand composing and decomposing fractions. M.4.NF.B.3
   a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. M.4.NF.B.3.A
   b. Decompose a fraction into a sum of unit fractions and/or multiples of that unit fraction in more than one way, recording each decomposition by an equation. Justify decompositions with explanations, visual fraction models, or equations. M.4.NF.B.3.B
   c. Add and subtract fractions, including mixed numbers, with like denominators (e.g., 3/8 + 2/8) and related denominators (e.g., ½ + ¼, 1/3 + 1/6) by using visual fraction models (e.g., tape diagrams and number lines), properties of operations, and the relationship between addition and subtraction. M.4.NF.B.3.C
   d. Solve word problems involving addition and subtraction of fractions with like and related denominators, including mixed numbers, by using visual fraction models and equations to represent the problem. M.4.NF.B.3.D

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4. Apply and extend previous understandings of multiplication to multiply a whole number times a fraction. M.4.NF.B.4

    a. Understand a fraction as a group of unit fractions or as a multiple of a unit fraction. M.4.NF.B.4.A

    b. Represent a whole number times a non-unit fraction (e.g., 3 x 2/5) using visual fraction models and understand this as combining equal groups of the non-unit fraction (3 groups of 2/5) and as a collection of unit fractions (6 groups of 1/5), recognizing this product as 6/5. M.4.NF.B.4.B

    c. Solve word problems involving multiplication of a whole number times a fraction by using visual fraction models and equations to represent the problem. Understand a reasonable answer range when multiplying with fractions. M.4.NF.B.4.C

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

5. 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. M.4.NF.C.5

6. Use decimal notation for fractions with denominators 10 or 100, connect decimals to real-world contexts, and represent with visual models (e.g., number line or area model). M.4.NF.C.6

7. Compare decimals to hundredths by reasoning about their size and using benchmarks. Recognize that comparisons are valid only when the decimals refer to the same whole. Justify the conclusions, by using explanations or visual models (e.g., number line or area model) and describe the result of the comparison using words and symbols (>, =, and <). M.4.NF.C.7