

Grade 4

Adopted 2022

Nebraska Mathematical Processes

- 1. Make sense of problems and persevere in solving them.** MP.1

 - 2. Reason quantitatively and abstractly and consider the reasoning of others.** MP.2

 - 3. Create and use representations to organize, record, and communicate mathematical ideas.** MP.3

 - 4. Analyze mathematical relationships to connect mathematical ideas.** MP.4

 - 5. Explain and justify mathematical ideas using precise mathematical language in written or oral communication.** MP.5
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Grade 4

Number

1. Students will solve problems and reason with number concepts using multiple representations, make connections within math and across disciplines, and communicate their ideas. **4.CS.1**
1. Numeric Relationships: Students will demonstrate and represent multi-digit numbers using relationships with the base-ten number system. **4.N.1**
 - a. Read, write, and demonstrate multiple equivalent representations for whole numbers up to 1,000,000 and decimals to the hundredths using visual representations, standard form, and expanded form. **4.N.1.A**
 - b. Represent and justify comparisons of whole numbers up to 1,000,000 and decimals through the hundredths place using number lines and reasoning strategies. **4.N.1.B**
 - c. Recognize a digit in one place represents ten times what it represents in the place to its right. **4.N.1.C**
 - d. Use decimal notation for fractions with denominators of 10 or 100 (e.g., $43/100 = 0.43$). **4.N.1.D**
2. Fractions and Decimals: Students will extend understanding of fractions by equivalence and ordering and will develop an understanding of decimals. **4.N.2**
 - a. Explain and demonstrate how a mixed number is equivalent to a fraction greater than one and how a fraction greater than one is equivalent to a mixed number using visual fraction models and reasoning strategies. **4.N.2.A**
 - b. Explain and demonstrate how equivalent fractions are generated by multiplying by a fraction equivalent to 1 using visual fraction models and the Identity Property of Multiplication. **4.N.2.B**
 - c. Compare and order fractions having unlike numerators or denominators using number lines, benchmarks, reasoning strategies, and/or equivalence. **4.N.2.C**
3. Operations with Fractions: Students will understand and demonstrate fractional computation. **4.N.3**
 - a. Decompose a fraction into a sum of fractions with the same denominator in more than one way and record each decomposition with an equation and a visual representation. **4.N.3.A**
 - b. Explain the meaning of addition and subtraction of fractions with like denominators using visual fraction models, properties of operations, and reasoning strategies. **4.N.3.B**
 - c. Add and subtract fractions and mixed numbers with like denominators. **4.N.3.C**
 - d. Solve authentic problems involving addition and subtraction of fractions and mixed numbers with like denominators. **4.N.3.D**
 - e. Multiply a fraction by a whole number using visual fraction models and properties of operations. **4.N.3.E**
4. Factors and Multiples: Students will find factors and multiples and classify numbers as prime or composite. **4.N.4**

- a. Determine whether a given whole number up to 100 is a multiple of a given one-digit number. 4.N.4.A
 - b. Determine factors of any whole number up to 100 and classify a number up to 100 as prime or composite. 4.N.4.B
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Algebra

2. Solve problems and reason with algebra using multiple representations, make connections within math and across disciplines, and communicate their ideas. 4.CS.2
 1. Operations and Algebraic Thinking: Students will extend understanding of multiplication and division and apply operational properties to solve problems involving variables. 4.A.1
 - a. Add and subtract multi-digit numbers using an algorithm. 4.A.1.A
 - b. Multiply up to a four-digit whole number by a one-digit whole number and multiply a two-digit whole number by a two-digit whole number, using strategies based on place value, properties of operations, and algorithms. 4.A.1.B
 - c. Divide up to a four-digit whole number by a one-digit divisor with and without a remainder using strategies based on place value. 4.A.1.C
 - d. Determine the reasonableness of whole number products and quotients using estimations and number sense. 4.A.1.D
 - e. Create a simple algebraic expression or equation using a variable for an unknown number to represent an authentic mathematical situation (e.g., $3 + n = 15$, $81 \div n = 9$). 4.A.1.E
 - f. Solve one- and two-step authentic problems using the four operations including interpreting remainders and the use of a letter to represent the unknown quantity. 4.A.1.F

Geometry

3. Solve problems and reason with geometry using multiple representations, make connections within math and across disciplines, and communicate their ideas. **4.CS.3**
 1. Shapes and Their Attributes: Students will draw and identify lines and angles and classify shapes by properties of their lines and angles. **4.G.1**
 - a. Identify, create, and describe points, lines, line segments, rays, angles, parallel lines, perpendicular lines, and intersecting lines. **4.G.1.A**
 - b. Justify the classification of angles as acute, obtuse, or right. **4.G.1.B**
 - c. Justify the classification of two-dimensional shapes based on the presence or absence of parallel and perpendicular lines or the presence or absence of specific angles. **4.G.1.C**
 - d. Recognize, draw, and justify lines of symmetry in two-dimensional shapes. **4.G.1.D**
 2. Measurement: Students will generate simple conversions from a larger unit to a smaller unit to solve authentic problems and measure angles. **4.G.2**
 - a. Identify and use the appropriate tools, operations, and units of measurement, both customary and metric, to solve authentic problems involving time, length, weight, mass, and capacity. **4.G.2.A**
 - b. Determine the reasonableness of measurements involving time, length, weight, mass, capacity, and angles. **4.G.2.B**
 - c. Generate simple conversions from a larger unit to a smaller unit within the customary and metric systems of measurement. **4.G.2.C**
 - d. Measure angles in whole number degrees using a protractor and relate benchmark angle measurements to their rotation through a circle (e.g., $180^\circ = 1/2$ of a circle). **4.G.2.D**
 - e. Recognize angle measures as additive and solve problems involving addition and subtraction to find unknown angles on a diagram. **4.G.2.E**
 3. Area and Perimeter: Students will apply perimeter and area formulas for rectangles. **4.G.3**
 - a. Apply perimeter and area formulas for rectangles to solve authentic problems. **4.G.3.A**

Data

4. Solve problems and reason with data/probability using multiple representations, make connections within math and across disciplines, and communicate their ideas. 4.CS.4
 1. Data Collection: Students will formulate questions to collect, organize, and represent data. 4.D.1
 - a. Generate and represent data using line plots where the horizontal scale is marked off in appropriate units—whole numbers, halves, fourths, or eighths. 4.D.1.A
 2. Analyze Data and Interpret Results: Students will analyze the data and interpret the results. 4.D.2
 - a. Solve authentic problems and analyze data involving addition or subtraction of fractions presented in line plots. 4.D.2.A