MATHEMATICS STANDARDS, K-5

Kindergarten

Counting and Cardinality

- Knows the number names and count sequence to 100 from any given number by ones and tens.
- Reads and writes numerals to 20.
- Counts objects up to 20.
- Understands the relationship between numbers and quantities.
- Compares two numbers or groups up to 10 (greater, more, fewer, one less, one more, etc.).

Operations and Algebraic Thinking

- Demonstrates an understanding of addition as adding to and putting together.
- Demonstrates an understanding of subtraction as taking from and taking apart.
- Represents and solves addition and subtraction story problems within 10 using objects or drawings.
- Composes and decomposes numbers to 10 in more than one way.
- Fluently adds and subtracts within 5.

Number and Operations in Base Ten

- Uses objects and drawings to demonstrate an understanding that the numbers 11- 19 are composed of a ten and ones.

Geometry

- Describes the relative position of objects using terms (above, below, beside, in front of, behind and next to).
- Identifies, describes, and composes 2-D and 3-D shapes.

Measurement and Data

- Describes and compares measureable attributes such as length and weight.

Grade 1

Operations and Algebraic Thinking

- Represents and solves word problems involving addition within 20 using objects, drawings, and equations.
- Represents and solves word problems involving subtraction within 20 using objects, drawings, and equations.
- Fluently adds and subtracts within 10.
- Demonstrates an understanding of and solves addition and subtraction equations.

Number and Operations in Base Ten

- Reads, writes, compares, and counts numbers to 120.
- Demonstrates an understanding of place value with tens and ones.

- Uses place value understanding, properties of operations, and models to add and subtract numbers within 100.
- Adds or subtracts multiples of 10 in the range 10-90 using models and strategies based on place value.

Measurement and Data

- Measures and compares lengths.
- Tells and writes time from analog and digital clocks to the hour and half-hour.
- Organizes, represents, and interprets data to ask and answer questions.
- Identifies compares and solves problems with coin values.

Geometry

- Uses defining attributes to identify, construct, and compare 2-D and 3-D shapes.
- Partitions circles and rectangles into two and four equal parts using the words halves, fourths, and quarters.

Grade 2

Operations and Algebraic Thinking

- Uses addition and subtraction within 100 to solve one-and two-step word problems by using drawings and equations.
- Fluently add and subtract within 20.
- Uses addition to find the total number of objects arranged in rectangular arrays and writes corresponding equations.

Number and Operations in Base Ten

- Demonstrates an understanding of place value within 1,000.
- Reads, writes, compares, and counts within numbers to 1,000.
- Fluently adds and subtracts within 100 using place value strategies.
- Uses place value understanding and properties of operations to add and subtract numbers within 1,000 using models.
- Mentally adds or subtracts 10 or 100 to numbers within 1,000.

Measurement and Data

- Measures, estimates, and compares lengths in standard units.
- Relates addition and subtraction to length on a number line.
- Represents and solves word problems involving dollar bills, quarters, dimes, nickels, and pennies.
- Tells and writes time from analog and digital clocks to the nearest 5 minutes.
- Represents data using picture graphs, bar graphs, and line plots and solves problems using information presented in bar graphs.

Geometry

- Recognizes and draws 2-D and 3-D shapes having specified attributes.
- Partitions circles and rectangles into equal parts and describes the shares using the words halves, thirds, and fourths.

Grade 3

- **Operations and Algebraic Thinking**
  - Demonstrates an understanding of multiplication as equal groups.
  - Demonstrates an understanding of division as partitioning and equal shares.
  - Represents and solves problems involving multiplication and division within 100 using the relationship between multiplication and division.
  - Fluently multiplies facts through 9x9.
  - Solves problems involving the four operations and identifies and explains patterns in arithmetic.

- **Number and Operations in Base Ten**
  - Uses place value to round whole numbers to the nearest 10 or 100.
  - Uses place value understanding and properties of operations to add and subtract within 1,000.

- **Number and Operations - Fractions**
  - Demonstrates an understanding of fractions as parts of a whole and numbers on a number line.
  - Demonstrates an understanding that fractions are equivalent when they are the same size or at the same point on a number line.
  - Compares fractions with like numerators and denominators by reasoning about their size.

- **Geometry**
  - Analyzes, compares, and classifies 2-D shapes.
  - Partitions shapes into parts with equal areas and expresses the area of each part as a fraction.

- **Measurement and Data**
  - Solves problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
  - Represents and interprets data using scaled picture graphs, scaled bar graphs, and line plots.
  - Demonstrates an understanding of area and perimeter.

Grade 4

- **Operations and Algebraic Thinking**
  - Uses division with whole numbers to solve word problems including problems in which remainders have to be interpreted.
  - Demonstrates an understanding of factors and multiples.

- **Number and Operations in Base Ten**
  - Uses place value understanding for reading, writing, comparing, and estimating numbers.

- Fluently adds and subtracts multi-digit whole numbers using the standard algorithm.
- Fluently multiplies and divides facts through 12x12.
- Uses strategies based on place value to multiply 4-digit by 1-digit numbers and 2- digit by 2-digit numbers.
- Uses strategies based on place value to divide 4-digit by 1-digit numbers with remainders.

Number and Operations - Fractions

- Demonstrates an understanding of equivalent fractions and ordering fractions.
- Adds and subtracts fractions and mixed numbers with like denominators using equivalent fractions and/or properties of operations.
- Multiplies a fraction by a whole number using visual fraction models.
- Demonstrates an understanding of decimal notation for fractions with denominators of 10 and 100 and compares decimals to the hundredths place.

Measurement and Data

- Knows relative sizes of measurement units and solves problems involving measurement and conversion from a larger unit to a smaller unit within one system of units, including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec.
- Applies the area and perimeter formulas for rectangles in real world and mathematical problems.
- Represents and interprets data using line plots in fractions of a unit (1/2, 1/4, 1/8) and solve problems involving addition and subtraction of fractions using information from the line plot.
- Demonstrates an understanding of, measures, and solves problems involving angles.

Geometry

- Draws and identifies lines and angles.
- Classifies 2-D shapes by properties of their lines and angles.

Grade 5

Operations and Algebraic Thinking

- Writes, interprets, and evaluates numerical expressions using all four operations and parentheses.
- Uses patterns, graphs, and rules to describe the relationship between corresponding terms.

Number and Operations in Base Ten

- Uses place value to read, write, and compare decimals to the thousandths.
- Fluently multiplies multi-digit whole numbers using the standard algorithm.
- Divides whole numbers with up to 4-digit dividends and 2-digit divisors to find whole number quotients using strategies based on place value, equations, and arrays or area models.
- Adds, subtracts, multiplies and divides decimals to the hundredths, using concrete models or drawings and strategies based on place value.

- **Number and Operations - Fractions**
  - Adds and subtracts fractions with unlike denominators using multiple strategies.
  - Multiplies a fraction or a whole number by a fraction and solves problems using visual models and/or equations.
  - Divides unit fractions by whole numbers and whole numbers by unit fractions using a story context and a visual model.

- **The Number System**
  - Uses positive and negative integers to describe quantities such as temperature and elevations.

- **Measurement and Data**
  - Converts measurement units within a given measurement system and uses conversions to solve multi-step problems.
  - Represents and interprets data using line plots in fractions of a unit (1/2, 1/4, 1/8) and uses operations on fractions to solve problems.
  - Demonstrates an understanding of volume and relates volume to operations of addition and multiplication in real world problems.

- **Geometry**
  - Graphs points on a coordinate plane and represents real-world and mathematical problems by graphing points.
  - Classifies 2-D shapes into categories based on their properties.