



Grade Band Indicator Alignment by Standard

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Overview of Document

This document gives the K-8 grade bands a quick reference on the development of each standard through the indicators by grade level. To not over-teach or under teach, it is vital that instruction of an indicator is at the level in which it has been written. Use this document in conjunction with the vertical alignment document to combine concepts and develop appropriate grade level instruction.

Horizontal Alignment for K-2

Data, Probability, and Statistical Reasoning

Standard 1: Collect and organize data and communicate through multiple representations.

Create and answer survey questions, collect and analyze data, and communicate through multiple representations.

Kindergarten	First Grade	Second Grade
K.DPSR.1.1 Sort pictures or objects into at least two categories. Count to determine how many are in each category. Limit to 20 pictures or objects.	1.DPSR.1.1 Sort pictures or objects into at least three categories (not to exceed 10 items in each category).	N/A
K.DPSR.1.2 Answer questions about data organized in a t-chart, object graph, or picture graph.	1.DPSR.1.2 Create a survey question and collect data with up to three categories. Create charts and graphs with a single unit scale to display the data. Use the graph to draw conclusions. Limit to one-step add-to, take-from, and part-part-whole questions.	2.DPSR.1.1 Create a survey question and collect data with up to four categories. Create tally charts, picture graphs, dot plots, and bar graphs with a single-unit scale to read the graph, answer questions, and draw conclusions. Limit to one-step add-to, take-from, part-part-whole, and comparison questions.

Measurement, Geometry, and Spatial Reasoning

Standard 1: Describe and compare objects in real-world situations using units of length, weight, money, and time.

Kindergarten	First Grade	Second Grade
K.MGSR.1.1 Identify a penny, nickel, dime, and quarter.	1.MGSR.1.4 Identify and write the values of a coin or a bill using a ¢ symbol for coin values or \$ symbol for bills. Limit to penny, nickel, dime, quarter, one-dollar bill, five-dollar bill, and ten-dollar bill.	N/A
N/A	1.MGSR.1.5 Count a collection of like coins to determine the total value of the set. Limit to pennies, nickels, and dimes with values not to exceed a dollar.	2.MGSR.1.3 Determine the value of mixed sets of coins or bills in mathematical and real-world situations and record the value using a ¢ or \$ symbol. Limit to pennies, nickels, dimes, and quarters up to a dollar; one-dollar bills, five-dollar bills, ten-dollar bills, and twenty-dollar bills up to \$100, and add-to or take-from problem types.
K.MGSR.1.2 Directly compare two objects using words including <i>shorter</i> , <i>longer</i> , <i>taller</i> , <i>lighter</i> , and <i>heavier</i> .	1.MGSR.1.1 Order three objects by length from shortest to longest and longest to shortest using direct comparison.	N/A
N/A	1.MGSR.1.2 Use nonstandard physical objects to estimate and then measure the length of an item as the number of same size units of length with no gaps or overlaps.	2.MGSR.1.1 Select and use appropriate tools to estimate and measure length of an object or distance to the nearest customary unit. Limit to inches, feet, and yards.
N/A	1.MGSR.1.3 Use analog and digital clocks to tell and record time to the hour and half hour.	2.MGSR.1.2 Use analog and digital clocks to tell and record time in five-minute intervals, identifying AM and PM.

Standard 2: Analyze, describe, and manipulate shapes to make sense of their relationships in mathematical and real-world situations.

Kindergarten	First Grade	Second Grade
N/A	1.MGSR.2.1 Sort a mixed set of polygons and describe the reasoning used while sorting the polygons.	2.MGSR.2.2 Classify shapes as polygons or non-polygons and defend that determination based on their attributes.
K.MGSR.2.1 Identify and describe the attributes of triangles, squares, rectangles, circles, cubes, and spheres to include everyday situations.	1.MGSR.2.2 Identify and describe the attributes of two-dimensional shapes and three-dimensional shapes. Limit to triangle, square, rectangle, rhombus, hexagon, circle, cone, cube, cylinder, square pyramid, and sphere.	N/A
K.MGSR.2.2 Describe relative positions of objects by appropriately using terms including <i>below, above, beside, between, inside, outside, in front of, or behind.</i>	N/A	N/A
N/A	1.MGSR.2.3 Identify and describe a given shape in everyday situations to include two-dimensional shapes and three-dimensional shapes. Limit to triangle, square, rectangle, rhombus, hexagon, circle, cone, cube, cylinder, square pyramid, and sphere.	2.MGSR.2.1 Identify and describe a given shape in everyday situations to include two-dimensional shapes and three-dimensional shapes. Limit to triangle, quadrilateral, pentagon, hexagon, octagon, circle, cone, cube, cylinder, rectangular prism, square pyramid, and sphere.

Kindergarten	First Grade	Second Grade
N/A	1.MGSR.2.4 Classify shapes as two-dimensional/flat or three-dimensional/solid and explain the reasoning using formal mathematical language. Limit to triangle, square, rectangle, rhombus, hexagon, circle, cone, cube, cylinder, square pyramid, and sphere.	2.MGSR.2.3 Classify two-dimensional shapes as triangles or quadrilaterals and justify each classification.
N/A	1.MGSR.2.5 Analyze and compare a pair of two-dimensional shapes or a pair of three-dimensional shapes of assorted sizes and orientations using formal mathematical language. Limit to triangle, square, rectangle, rhombus, hexagon, circle, cone, cube, cylinder, square pyramid, and sphere.	N/A

Numerical Reasoning

Standard 1: Represent multi-digit numbers in a variety of ways to build place value understanding.

Kindergarten	First Grade	Second Grade
K.NR.1.1 Read, write, and represent the numerals 0 to 20 and represent the written numeral with concrete models.	1.NR.1.1 Read, write, and represent numbers to 100 using concrete models, drawings, standard form, base ten language, and equations in expanded form.	2.NR.1.1 Read, write, and represent numbers up to 999 using concrete models, drawings, standard form, base ten language, and equations in expanded form.
N/A	1.NR.1.2 Represent and explain that whole numbers 1 through 99 are organized into groups of tens and ones, and a digit has a different value depending on its placement.	2.NR.1.2 Represent and explain that whole numbers 1 through 999 are organized into groups of hundreds, tens, and ones, and a digit has a different value depending on its placement.
K.NR.1.2 Compose and decompose numbers from 11 to 19 into tens and ones by using concrete objects, pictorial models, or drawings to demonstrate understanding that the teen numbers are composed of one set of ten ones and a few more ones.	1.NR.1.3 Compose and decompose whole numbers from 1 through 99 in more than one way using tens and ones. Explain and demonstrate each composition or decomposition with the use of concrete models, drawings, and/or equations.	2.NR.1.3 Compose and decompose whole numbers from 1 through 999 in more than one way using hundreds, tens, and ones. Explain and demonstrate each composition or decomposition with the use of concrete models, drawings, and equations.
N/A	1.NR.1.4 Apply place value reasoning to identify the number that is one more and one less, ten more, and ten less than a given number with up to two digits.	2.NR.1.4 Apply place value reasoning to identify the number that is 10 more, 10 less, 100 more, and 100 less than a given three-digit number through 999.

Standard 2: Demonstrate and explain the relationship between numbers and quantities.

Kindergarten	First Grade	Second Grade
K.NR.2.1 Count forward by ones and tens to 100 and backward from 10 by ones.	<p>1.NR.2.1 Count by ones forward or backward starting at any number up to 120 making accurate decade transitions.</p> <p>1.NR.2.2 Skip count by fives and tens from any multiple of five to 100, identifying place value patterns in the sequence.</p>	2.NR.2.1 Count forward and backward by ones, tens, and hundreds from any number within 999 and identify patterns in the sequence.
K.NR.2.2 Subitize a quantity of up to 10 objects in an organized arrangement without counting, explaining how one grouped the objects within the set to determine the total quantity.	N/A	N/A
K.NR.2.3 Given a group of up to 20 objects, count the number of objects in that group and represent the number of objects with a written numeral. State the number of objects in a rearrangement of that group without recounting.	N/A	N/A
K.NR.2.4 Given a number from 0 to 20, count out that many objects.	N/A	N/A

Standard 3: Demonstrate the ability to compare quantities of objects and numerals representing quantities of objects.

Kindergarten	First Grade	Second Grade
K.NR.3.1 Compare up to 10 objects in one set to another set of up to 10 objects using the phrases <i>more than</i> , <i>fewer than</i> , or <i>the same as</i> .	1.NR.3.1 Compare representations of two numbers up to 100 using the phrases <i>is greater than</i> , <i>is less than</i> , or <i>is equal to (the same value as)</i> .	2.NR.3.1 Compare representations of whole numbers up to 999 and write a comparison statement using words and symbols. Limit to <i>is equal to (=)</i> , <i>is less than (<)</i> , and/or <i>is greater than (>)</i> .
N/A	N/A	2.NR.3.2 When given a two-digit number, identify which multiple of 10 the number is closest to.

Standard 4: Represent partitioned shapes in multiple ways using part-whole relationships.

Kindergarten	First Grade	Second Grade
N/A	1.NR.4.1 Partition in multiple ways squares, rectangles, and circles into two or four equal-sized parts. Name the pieces as halves and fourths.	2.NR.4.1 Partition in multiple ways squares, rectangles, and circles into two or four equal sized parts, and describe the parts using the words <i>halves</i> , <i>fourths</i> , <i>a half of</i> , and <i>a fourth of</i> (not quarters).
N/A	N/A	2.NR.4.2 Explain that when partitioning a square, rectangle, or circle into two or four equal parts, the parts become smaller as the number of parts increases.

Patterns, Algebra, and Functional Reasoning

Standard 1: Develop an understanding of the relationship between addition and subtraction to solve problems.

Kindergarten	First Grade	Second Grade
K.PAFR.1.1 Add and subtract number combinations within 5.	1.PAFR.1.4 Add and subtract number combinations flexibly and accurately within 10.	2.PAFR.1.5 Add and subtract number combinations flexibly and accurately within 20.
N/A	1.PAFR.1.1 Determine and explain if an equation within 10 is true using a variety of equation formats.	2.PAFR.1.2 Determine and explain if an equation (within 20) is true using a variety of equation formats.
K.PAFR.1.2 Create a sum of 10 using objects and drawings when given one of two addends 0–9, to include real-world situations.	N/A	2.PAFR.1.4 For any number from 0 to 99, find the number that makes 100 when added to the given number.
K.PAFR.1.3 Compose and decompose numbers up to 10 in different ways. Record using objects or drawings.	1.PAFR.1.2 Compose and decompose numbers less than or equal to 20 in more than one way. Record each composition or decomposition as an equation.	N/A
K.PAFR.1.4 Solve add-to/joining, take-from/separating, part-part-whole (total unknown), part-part-whole (both addends unknown) real-world situations to find sums and differences within 10.	1.PAFR.1.3 Solve add-to, take-from, and part-part-whole real-world situations to find sums and differences within 20. Situations include result or change unknown, both addends unknown, and total or one part unknown.	2.PAFR.1.3 Solve one-step add-to, take-from, part-part-whole, and additive comparison real-world situations through 99 with the unknown in any position.
N/A	1.PAFR.1.5 Apply and explain the <i>Commutative Property of Addition</i> to find the sum (through 20) of two addends and explain that the value does not change when the order of the two numbers changes.	2.PAFR.1.6 Apply the <i>Associative Property of Addition</i> to find the sum (through 20) of three addends and explain that the value can be found using various grouping strategies.

Kindergarten	First Grade	Second Grade
N/A	1.PAFR.1.6 Determine an unknown number in addition and subtraction equations within 10.	2.PAFR.1.7 Determine the unknown number in addition and subtraction equations within 20, with the unknown in any position.
N/A	1.PAFR.1.7 Find the sum of a two-digit number and a one-digit number or a two-digit number and a multiple of 10 (1–99) using concrete models, drawings, and strategies that reflect place value understanding, the inverse relationship of addition and subtraction, and the properties of the operations to justify the sum.	2.PAFR.1.1 Use a strategy to accurately find sums and differences of two-digit numbers within 100 and justify the sum or difference.
N/A	1.PAFR.1.8 Find the difference between two numbers that are multiples of 10, both in the range 10–90, and write the corresponding equation. Explain the reasoning used.	2.PAFR.1.1 Use a strategy to accurately find sums and differences of two-digit numbers within 100 and justify the sum or difference.
N/A	N/A	2.PAFR.1.8 Sort a collection of 20 or fewer objects into two groups to determine if the number of objects is even or odd.
N/A	N/A	2.PAFR.1.9 Find the total number of objects arranged in equal groups or in a rectangular array and write an addition equation to express the total as a sum (up to 25) of equal addends.

Standard 2: Recognize, describe, extend, and create patterns.

Kindergarten	First Grade	Second Grade
N/A	1.PAFR.2.1 Create, describe, and extend (to the next term) a growing shape pattern.	2.PAFR.2.1 Describe, extend, and create a growing shape pattern with up to three terms within a sequence.
K.PAFR.2.1 Describe, extend, and create (to the next term) simple repeating patterns in the form of <i>AB</i> , <i>AAB</i> , <i>ABB</i> , and <i>ABC</i> .	1.PAFR.2.2 Create, describe, and extend (to three terms within a sequence) repeating patterns using <i>AB</i> , <i>AAB</i> , <i>ABB</i> , and <i>ABC</i> type patterns.	2.PAFR.2.2 Create, describe, and extend an appropriate one-step rule for number patterns using addition and subtraction within 100.

Horizontal Alignment for 3-5

Data, Probability, and Statistical Reasoning

Standard 1: Collect and analyze data and communicate through multiple representations.

Third Grade	Fourth Grade	Fifth Grade
N/A	N/A	5.DPSR.1.1 Describe data by determining the range and mode, including whole numbers, fractional data, and decimal data. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, and 10, and limit decimals to decimals through the hundredths place.
3.DPSR.1.1 Collect and organize categorical and numerical data based on observations, surveys, experiments, and investigations with whole number values using tables, scaled picture graphs, scaled bar graphs, or dot plots. Use titles and labels. Limit scales to multiples of 1, 2, 5, and 10.	4.DPSR.1.1 Collect and organize numerical and categorical data based on observations, investigations, surveys, and experiments using tables, scaled bar graphs, or dot plots. Use titles and labels. Scales to include whole numbers, halves, and fourths.	5.DPSR.1.3 Analyze categorical and numerical data in graphical displays to make predictions or draw conclusions. Limit displays to tables, bar graphs, dot plots, line graphs, and circle graphs with scales of whole numbers, halves, fourths, and eighths.
3.DPSR.1.2 Solve one-step, real-world situations using whole number data represented in tables, scaled picture graphs, scaled bar graphs, or dot plots. Limit scales to multiples of 1, 2, 5, and 10.	4.DPSR.1.2 Solve one-step, real-world situations using whole number and fractional data represented in tables, scaled picture graphs, scaled bar graphs, or dot plots. Limit to like denominators of 2, 3, 4, 5, 6, 8, and 10.	5.DPSR.1.2 Solve two-step, real-world situations using whole number and fractional data represented in tables, line graphs, scaled bar graphs, or dot plots. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100.

Standard 2: Represent the probability of simple events and determine possible outcomes.

Third Grade	Fourth Grade	Fifth Grade
3.DPSR.2.1 Identify the possible outcomes of a simple event.	4.DPSR.2.1 Determine the possible outcomes of a simple event and record the probability as certain, possible, or impossible.	5.DPSR.2.1 Represent the probability of a simple event as 0, a fraction, or 1. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 20, and 25.

Measurement, Geometry, and Spatial Reasoning

Standard 1: Solve area and perimeter problems in real-world and mathematical situations.

Third Grade	Fourth Grade	Fifth Grade
3.MGSR.1.1 Determine the area of squares and rectangles presented in relevant problems by covering the space with square units and counting the total number of units needed.	4.MGSR.1.2 Apply area formulas for rectangles to solve real-world situations. Use square units to label area measurements.	5.MGSR.1.1 Solve problems involving area and perimeter of composite figures by decomposing with rectangles.
3.MGSR.1.2 Determine the perimeter of regular and irregular triangles and quadrilaterals with known side lengths.	4.MGSR.1.1 Apply perimeter formulas for rectangles to solve real-world situations including finding the perimeter, given the side lengths, and finding an unknown side length.	5.MGSR.1.1 Solve problems involving area and perimeter of composite figures by decomposing with rectangles.
3.MGSR.1.3 Determine if a real-world situation is an example of the need for finding the area or the perimeter of a figure.	N/A	N/A
N/A	N/A	5.MGSR.1.2 Estimate and measure the volume of a right rectangular prism with whole-number side lengths by filling it with unit cubes.

Standard 2: Estimate and measure using units of length, liquid volume, currency, and intervals of time. (3rd and 4th)
 Convert within a given measurement system and measure length. (5th)

Third Grade	Fourth Grade	Fifth Grade
3.MGSR.2.1 Determine the value of any collection of coins, not to exceed \$5. Write the amount in the form of dollars and cents using the decimal notation. Limit to penny, nickel, dime, and quarter.	4.MGSR.2.1 Calculate the value of a collection of coins and bills in real-world situations to determine whether there is enough money to make a purchase. Justify based on comparison of money amounts.	N/A
3.MGSR.2.2 Use analog and digital clocks to tell and record time to 1-minute intervals, identifying AM and PM.	N/A	N/A
3.MGSR.2.3 Solve problems involving addition and subtraction of time intervals to determine elapsed time to the nearest half hour.	4.MGSR.2.2 Solve real-world situations involving addition and subtraction of time intervals within 60 minutes to find elapsed time, start time, or end time.	N/A
3.MGSR.2.4 Estimate and measure length/distance to the nearest half inch and nearest whole centimeter.	4.MGSR.2.3 Measure length to the nearest quarter inch.	5.MGSR.2.2 Estimate and measure lengths to the nearest eighth of an inch or nearest millimeter.
N/A	4.MGSR.2.4 Measure weight in customary units and metric units to the nearest whole unit. Limit to ounces, pounds, grams, and kilograms.	N/A

Third Grade	Fourth Grade	Fifth Grade
<p>3.MGSR.2.5 Determine which unit of liquid volume is most appropriate to measure in real-world situations. Limit to fluid ounces, cups, pints, quarts, gallons, milliliters, and liters.</p>	<p>4.MGSR.2.5 Convert customary units of length, weight, and liquid volume from a larger unit to a smaller unit, given direct comparisons of the two measurements and/or the unit equivalencies within a single system of measurement. Limit to inches, feet, yards, ounces, pounds, fluid ounces, cups, pints, quarts, and gallons when given unit equivalencies.</p>	<p>5.MGSR.2.1 Given the unit equivalencies, convert within a single system of measurement from larger units to smaller units and smaller units to larger units for length, weight, liquid volume, and time. Use these conversions in solving real-world situations. Limit units to inches, feet, yards, ounces, pounds, fluid ounces, cups, pints, quarts, gallons, seconds, minutes, hours, milli-, centi-, kilo-, and base units (grams, liters, meters).</p>

Standard 3: Extend geometric reasoning to attributes of polygons and/or polyhedrons. (3rd and 4th)
Graph on the coordinate plane. (5th)

Third Grade	Fourth Grade	Fifth Grade
<p>3.MGSR.3.1 Describe and draw right, acute, obtuse, and straight angles. Identify these angle types in two-dimensional figures including triangles and quadrilaterals.</p> <p>3.MGSR.3.2 Identify, describe, and draw points, lines, line segments, rays, intersecting lines, perpendicular lines, and parallel lines. Identify these in two-dimensional figures.</p>	<p>4.MGSR.3.1 Classify triangles according to side length (<i>isosceles, equilateral, scalene</i>) and angle measure (<i>acute, obtuse, right, equiangular</i>).</p> <p>4.MGSR.3.2 Classify quadrilaterals in a hierarchy based on their shared attributes.</p>	<p>N/A</p>

Third Grade	Fourth Grade	Fifth Grade
N/A	N/A	5.MGSR.3.1 Identify the origin, x -axis, and y -axis in the coordinate system. Write, plot, and label ordered pairs, including values in a function table, in the first quadrant of the coordinate plane.
N/A	N/A	5.MGSR.3.2 Represent mathematical and real-world situations by graphing, labeling, and interpreting points in the first quadrant of the coordinate plane.

Numerical Reasoning

Standard 1: Represent and compare numbers using relationships within the base ten number system.

Third Grade	Fourth Grade	Fifth Grade
3.NR.1.1 Read, write, and represent whole numbers through the thousands period (0 to 999,999) on a number line and in standard form, base ten language, word, and equations in expanded form.	4.NR.1.1 Read and write whole numbers through the millions period (0 to 999,999,999) in word, standard, and equations in expanded form.	5.NR.1.1 Read, write, and represent multi-digit numbers from 0 to 999 with decimals to the thousandths place. Use pictorial, word, standard, or expanded form with fraction or decimal notation.
N/A	N/A	5.NR.1.2 Explain how the value of a digit in a multidigit number changes if the digit moves one or more places to the left or right in the base ten system. Include decimals to the thousandths place.

Third Grade	Fourth Grade	Fifth Grade
3.NR.1.2 Compose and decompose 4-digit whole numbers in multiple ways using thousands, hundreds, tens, and ones.	N/A	N/A
3.NR.1.3 Compare two whole numbers up to 999,999 based on the place value of the digits using the symbols for <i>is equal to (=)</i> , <i>is less than (<)</i> , or <i>is greater than (>)</i> .	4.NR.1.3 Order whole numbers within 999,999 (no more than 3) in ascending or descending order and record the comparison(s) using symbols for <i>is less than (<)</i> and/or <i>is greater than (>)</i> .	N/A
3.NR.1.4 Round whole numbers from 0 to 1,000 to the nearest 10 or 100.	4.NR.1.2 Estimate sums, differences, products, and quotients of multi-digit whole numbers, using rounding and place value to determine the reasonableness of real-world problem solutions. Write an equation for the estimate.	5.NR.1.3 Round decimal numbers up to 999 with decimals to the thousandths place to the nearest hundredth, tenth, or whole number.
N/A	N/A	5.NR.1.4 Use patterns to explain the exponents when multiplying and dividing by powers of 10, not to exceed the thousandths place.

Standard 2: Represent and compare fractions in multiple ways using part-whole relationships. (3rd and 4th)
 Represent and compare fractions in multiple ways. (5th)

Third Grade	Fourth Grade	Fifth Grade
3.NR.2.1 Identify unit fractions as the quantity formed by one part when a whole is partitioned into 2, 3, 4, 6, or 8 equal-sized parts. Express each part as a unit fraction of the whole.	N/A	N/A
3.NR.2.2 Represent fractions from 0 to 1 using concrete, set, area, and linear models, and write them in standard form and word form. Limit denominators to 2, 3, 4, 6, and 8.	4.NR.2.1 Represent fractions with denominators of 10 and 100 in words, models, and decimal notations.	N/A
N/A	4.NR.2.2 Compare decimal numbers to the hundredths using the benchmarks 0, 0.5, and 1.0, concrete area, and linear models. Use the symbols for <i>is equal to</i> (=), <i>is less than</i> (<), and/or <i>is greater than</i> (>).	N/A
3.NR.2.3 Express whole numbers as fractions and identify fractions that are equivalent to whole numbers. Limit denominators to 1, 2, 3, 4, 6, and 8.	N/A	N/A

Third Grade	Fourth Grade	Fifth Grade
3.NR.2.4 Compose fractions between the whole numbers 0 and 5 using unit fractions. Record the composition as a mixed number or fraction greater than 1. Limit denominators to 2, 3, 4, 6, and 8.	4.NR.2.4 Represent the composition and decomposition of fractions with the same denominator, including mixed numbers and fractions greater than 1, using multiple representations. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100.	N/A
3.NR.2.5 Recognize two fractions are equivalent based. Limit denominators to 2, 3, 4, 6, and 8, and fractions should be limited to fractions between 0 and 1.	4.NR.2.3 Generate equivalent fractions, including fractions greater than 1, using multiple representations. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100.	N/A
N/A	4.NR.2.5 Explain and demonstrate how a mixed number is equivalent to a fraction greater than 1 and how a fraction greater than 1 is equivalent to a mixed number. Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100.	N/A
3.NR.2.6 Compare two fractions with the same numerator or same denominator based on the same size whole by reasoning about their size. Use the symbols for <i>is equal to</i> (=), <i>is less than</i> (<), or <i>is greater than</i> (>). Limit denominators to 2, 3, 4, 6, and 8, and fractions should be limited to fractions between 0 and 1.	4.NR.2.6 Compare fractions and mixed numbers with like and unlike denominators applying benchmark fractions such as $0, \frac{1}{2},$ and 1 using the symbols for <i>is equal to</i> (=), <i>is less than</i> (<), or <i>is greater than</i> (>). Limit fractions to denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100.	5.NR.2.1 Compare fractions and mixed numbers with like and unlike denominators of 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, and 100 using equivalence to create a common denominator. Use the symbols for <i>is less than</i> (<), <i>is more than</i> (>), or <i>is equal to</i> (=) to record the comparison.

Patterns, Algebra, and Functional Reasoning

Standard 1: Use multiple representations to reason and solve problems involving operational properties of whole numbers. (3rd)

Use multiple representations to reason and solve problems involving operational properties of whole numbers and decimals. (4th and 5th)

Third Grade	Fourth Grade	Fifth Grade
3.PAFR.1.1 Use a strategy to compute sums and differences up to 1,000.	4.PAFR.1.1 Use a strategy to accurately compute sums and differences of whole numbers up to 100,000 and justify the sum or difference.	5.PAFR.1.3 Use a strategy to compute sums and differences of decimal numbers to the hundredths.
3.PAFR.1.2 Multiply whole numbers (factors 0–10) and divide whole numbers (divisors 1–10) using a model and write a corresponding equation.	4.PAFR.1.2 Compute the product of a one-digit whole number times a multiple of 10 (from 10 to 90) and 100 (from 100 to 900) based on place value and properties of operations.	<p>5.PAFR.1.1 Use a strategy to compute the product of a two- or three-digit factor times a two-digit factor to include real-world situations.</p> <p>5.PAFR.1.2 Use a strategy to compute the quotient of a multi-digit whole number dividend divided by a two-digit whole number divisor, with and without remainders, to include real-world situations. Limit the dividend to four digits.</p> <p>5.PAFR.1.4 Use a strategy to multiply a one-digit whole number by a decimal to the hundredths and divide a decimal to the hundredths (dividend) by a one-digit whole number (divisor). Justify the calculation.</p>

Third Grade	Fourth Grade	Fifth Grade
<p>3.PAFR.1.3 Multiply two whole numbers from 0 to 10 and divide using related facts flexibly and accurately.</p>	<p>4.PAFR.1.2 Compute the product of a one-digit whole number times a multiple of 10 (from 10 to 90) and 100 (from 100 to 900) based on place value and properties of operations.</p> <p>4.PAFR.1.3 Decompose numbers by the value of each digit to multiply whole numbers up to four digits by a one-digit number and two 2digit whole numbers.</p> <p>4.PAFR.1.4 Use a strategy to divide up to a four-digit dividend by a one-digit divisor, with and without remainders. Justify the calculation.</p>	<p>5.PAFR.1.1 Use a strategy to compute the product of a two- or three-digit factor times a two-digit factor to include real-world situations.</p> <p>5.PAFR.1.2 Use a strategy to compute the quotient of a multi-digit whole number dividend divided by a two-digit whole number divisor, with and without remainders, to include real-world situations. Limit the dividend to four digits.</p> <p>5.PAFR.1.4 Use a strategy to multiply a one-digit whole number by a decimal to the hundredths and divide a decimal to the hundredths (dividend) by a one-digit whole number (divisor). Justify the calculation.</p>

Standard 2 (3rd) and Standard 3 (4th and 5th): Use reasoning to represent and solve algebraic and numerical situations.

Third Grade	Fourth Grade	Fifth Grade
3.PAFR.2.1 Determine the unknown whole number in a multiplication or division real-world situation relating three whole numbers when the unknown is a missing factor, product, dividend, divisor, or quotient.	N/A	N/A
3.PAFR.2.2 Solve one- and two-step real-world situations using addition and subtraction up to 1,000.	<p>4.PAFR.3.3 Solve real-world situations involving multiplicative comparison situations and write equations to represent the problem using a variable for the unknown.</p> <p>4.PAFR.3.4 Solve two-step, real-world situations using the four operations involving whole number answers. Represent the problem using an equation with a variable as the unknown in any position.</p>	N/A
3.PAFR.2.3 Identify, create, and extend numerical patterns to determine the next three terms in an addition or subtraction sequence.	4.PAFR.3.2 Describe and extend a numerical pattern that follows a rule using function tables and real-world situations.	5.PAFR.3.3 Identify a rule that can describe the pattern from the data of a function table and write it as an expression.

Third Grade	Fourth Grade	Fifth Grade
3.PAFR.2.4 Recognize that a whole number is a multiple of each of its factors 1–10.	4.PAFR.3.1 Find all factor pairs for a whole number in the range 1–50. Determine whether the whole number is prime or composite.	5.PAFR.3.1 Determine the least common multiple (LCM) to find a common denominator. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100. 5.PAFR.3.2 Determine the greatest common factor (GCF) of two numbers both less than or equal to 50 to simplify a fraction into its standard form.
N/A	N/A	5.PAFR.3.4 Translate a two-step real-world situation into a numerical expression using parentheses as grouping symbols and evaluate the expression.

Standard 2 (4th and 5th): Use multiple representations to reason and solve problems involving operational properties of fractions.

Third Grade	Fourth Grade	Fifth Grade
N/A	4.PAFR.2.1 Use a strategy to accurately compute sums and differences of fractions with like denominators and justify the reasonableness of the answer. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 25, and 100.	5.PAFR.2.1 Use a strategy to compute sums and differences of fractions and mixed numbers with unlike denominators and justify the sum or difference to include real-world situations. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 20, 25, 50, and 100.

Third Grade	Fourth Grade	Fifth Grade
N/A	4.PAFR.2.2 Use fraction and decimal equivalencies to add and subtract tenths and hundredths, to include mixed numbers and fractions greater than 1.	N/A
N/A	4.PAFR.2.3 Represent and compute the product of a whole number times a unit fraction. Limit denominators to 2, 3, 4, 5, 6, 8, 10, 12, 25, and 100.	5.PAFR.2.2 Use a strategy to multiply a fraction by a fraction or a fraction by a whole to include real-world situations. Limit denominators to 2, 3, 4, 5, 6, 8, 10, and 12.
N/A	4.PAFR.2.4 Interpret a fraction as an equal sharing division situation, where a quantity (the numerator) is divided into equal parts (the denominator) to include real-world situations.	5.PAFR.2.3 Interpret and represent division of a whole number dividend by a unit fraction divisor and a unit fraction dividend by a whole number divisor and apply to real-world situations. Limit denominators to 2, 3, 4, 5, 6, 8, 10, and 12.

Horizontal Alignment for 6-8

Data, Probability, and Statistical Reasoning

Standard 1: Analyze data sets to identify their statistical elements.

Sixth Grade	Seventh Grade	Eighth Grade
6.DPSR.1.1 Identify the sample size for a numerical set of data in mathematical and real-world situations.	N/A	N/A
6.DPSR.1.2 Create box plots to represent numerical data sets in mathematical and real-world situations.	7.DPSR.1.1 Create stem-and-leaf plots to represent numerical data sets in mathematical and real-world situations. 7.DPSR.1.4 Create histograms to represent data sets and interpret histograms to answer questions or draw conclusions about data sets.	8.DPSR.1.1 Create and analyze scatterplots to represent numerical data sets in mathematical and real-world situations.

Sixth Grade	Seventh Grade	Eighth Grade
<p>6.DPSR.1.3 Use the shape of the graph to determine whether median or mode best describes the data set.</p>	<p>7.DPSR.1.2 Use the shape of the graph to select the measure of center (mean, median, or mode) that best describes the data set.</p>	<p>8.DPSR.1.2 Draw inferences about two populations utilizing representative random samples of comparisons of the shape of the distribution, measures of center, and measures of variability. Limit measures to <i>mean, median, mode, range, mean absolute deviation, and interquartile range</i>.</p> <p>8.DPSR.1.4 For two data sets (numerical or graphical), compare and interpret the centers, spreads, and overlap of data to draw inferences about data in mathematical and real-world situations. Limit displays to double line graphs, back-to-back stem-and-leaf plots, and double box plots.</p>
<p>6.DPSR.1.4 Calculate and interpret the median, mode, range, interquartile range in mathematical and real-world situations.</p>	<p>7.DPSR.1.3 Calculate and interpret the measures of center (<i>mean, median, mode</i>) and spread (<i>mean absolute deviation, interquartile range, range</i>) in mathematical and real-world situations.</p>	<p>8.DPSR.1.3 Describe how adding and deleting data throughout the data set can affect the mean, median, mode, and distribution of the data set.</p>

Standard 2: Calculate and interpret probability.

Sixth Grade	Seventh Grade	Eighth Grade
N/A	7.DPSR.2.1 Identify the sample space for a simple event.	8.DPSR.2.1 Determine the sample space for a compound event.
6.DPSR.2.1 Given the probability of a random event, expressed as a number from 0 to 1, state the likelihood of the event occurring.	N/A	N/A
6.DPSR.2.2 Find the probability of simple events in mathematical and real-world situations. Limit denominators to 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.	7.DPSR.2.2 Calculate and interpret the theoretical probability of a simple random event. 7.DPSR.2.3 Calculate and interpret the experimental probability of a random event related to a simple experiment.	8.DPSR.2.2 Calculate and interpret the probability of compound independent and dependent events.
N/A	7.DPSR.2.4 Compare and contrast the experimental and theoretical probabilities for a simple experiment.	N/A
6.DPSR.2.3 Given the probability of an event, identify and calculate the complement of that event.	N/A	N/A

Measurement, Geometry, and Spatial Reasoning

Standard 1: Determine the measurements of geometric figures.

Sixth Grade	Seventh Grade	Eighth Grade
6.MGSR.1.1 Find the area of a triangle, square, rectangle, parallelogram, and trapezoid.	7.MGSR.1.3 Solve mathematical and real-world situations involving circumference or area of circles.	N/A
N/A	7.MGSR.1.1 Identify the parts of a circle. Limit the parts to <i>center</i> , <i>radius</i> , <i>diameter</i> , and <i>chord</i> .	N/A
N/A	7.MGSR.1.2 Describe the relationship between the <i>radius</i> , <i>diameter</i> , and <i>circumference of a circle</i> .	N/A
N/A	7.MGSR.1.4 Determine if three given side lengths can form a triangle using the <i>Triangle Inequality Theorem</i> .	8.MGSR.1.4 Determine if a given set of sides forms a right triangle.
6.MGSR.1.2 Create nets to represent three-dimensional shapes. 6.MGSR.1.4 Find the area of composite figures by decomposing them into triangles and rectangles to solve mathematical and real-world situations.	N/A	N/A
6.MGSR.1.3 Calculate the surface area of right rectangular prisms, right triangular prisms, right rectangular pyramids, and right triangular pyramids using two-dimensional nets.	7.MGSR.1.6 In mathematical and real-world situations, find the surface area of right prisms and right pyramids having triangular or quadrilateral bases.	N/A

Sixth Grade	Seventh Grade	Eighth Grade
6.MGSR.1.5 Calculate the volume of a right rectangular prism using the formula ($V = Bh$) in mathematical and real-world situations.	7.MGSR.1.5 In mathematical and real-world situations, find the volume of right prisms and right pyramids having triangular or quadrilateral bases.	8.MGSR.1.1 Given the geometric formulas, find the volume of cones, cylinders, and spheres in mathematical and real-world situations.
N/A	N/A	8.MGSR.1.2 Find the distance between any two points in the coordinate plane using the <i>Pythagorean Theorem</i> .
N/A	N/A	8.MGSR.1.3 Given the <i>Pythagorean Theorem</i> , determine unknown side lengths in right triangles in mathematical and real-world situations.

Standard 2: Determine angle and/or side relationships.

Sixth Grade	Seventh Grade	Eighth Grade
6.MGSR.2.1 Determine if two angles are complementary or supplementary.	7.MGSR.2.3 Identify the relationships and measures among angles formed by two intersecting lines, given the measure of one angle. Limit to supplementary, complementary, vertical, and adjacent relationships. 7.MGSR.2.4 Write and solve equations to solve mathematical and real-world situations involving the relationships among angles formed by two intersecting lines. Limit to supplementary, complementary, vertical, and adjacent relationships.	8.MGSR.2.1 Determine missing angle measurements created when parallel lines are cut by a transversal.

Sixth Grade	Seventh Grade	Eighth Grade
6.MGSR.2.2 Determine the measure of angles using a protractor.	7.MGSR.2.1 Determine the measure of the third angle given the measure of the other two angles of a triangle using the <i>Triangle Sum Theorem</i> .	8.MGSR.2.3 Identify the congruent corresponding angles of similar polygons. 8.MGSR.2.4 Discover and apply the <i>Exterior Angle Theorem</i> of triangles to find a missing angle.
N/A	7.MGSR.2.2 Solve mathematical and real-world situations involving dimensions and areas of geometric figures including scale drawings and scale factors.	8.MGSR.2.2 Determine if two-dimensional figures are congruent or similar. 8.MGSR.2.5 Apply proportional reasoning to find the missing side lengths of two similar figures.

Standard 3: Graph on the coordinate plane.

Sixth Grade	Seventh Grade	Eighth Grade
6.MGSR.3.1 Plot ordered pairs in all four quadrants and identify points on a graph by writing ordered pairs.	7.MGSR.3.1 Find distances between ordered pairs on the coordinate plane, limited to the same x-coordinate or the same y-coordinate.	N/A

Sixth Grade	Seventh Grade	Eighth Grade
6.MGSR.3.2 Graph a polygon on a coordinate plane given the coordinates of the vertices.	N/A	<p>8.MGSR.3.1 Identify the transformation as a rotation, reflection, and/or translation. Limit rotations to multiples of 90 degrees centered on the origin.</p> <p>8.MGSR.3.2 Identify congruent angles and congruent line segments of a preimage and its image.</p> <p>8.MGSR.3.3 Translate geometric figures vertically and/or horizontally.</p> <p>8.MGSR.3.4 Reflect geometric figures with respect to the x-axis and/or y-axis.</p> <p>8.MGSR.3.5 Rotate geometric figures 90, 180, and 270 degrees, both clockwise and counterclockwise, about the origin in a coordinate plane.</p>
N/A	N/A	8.MGSR.3.6 Create a dilation using a given scale factor and describe the effect of a dilation.
N/A	N/A	8.MGSR.3.7 Describe the effect of a series of transformations, including <i>dilations</i> , <i>translations</i> , <i>rotations</i> , and <i>reflections</i> , on two-dimensional figures using coordinates on the coordinate plane.

Numerical Reasoning

Standard 1: Translate among multiple representations of rational numbers.

Sixth Grade	Seventh Grade	Eighth Grade
6.NR.1.1 Convert positive rational numbers into equivalent forms among terminating decimals, fractions (including mixed numbers), and percentages. Limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.	7.NR.1.1 Convert rational numbers into equivalent forms among fractions (including mixed numbers), decimals, and percentages. Exclude the conversion of repeating decimals to fractions.	8.NR.1.1 Convert any form of a rational number to any other form including fractions (mixed numbers), decimals, and percentages.

Standard 2: Utilize rational numbers in mathematical and real-world situations.

Sixth Grade	Seventh Grade	Eighth Grade
6.NR.2.1 Compare two positive rational numbers and write statements using the symbols for <i>is equal to</i> ($=$), <i>is not equal to</i> (\neq), <i>is less than</i> ($<$), and/or <i>is greater than</i> ($>$) in mathematical and real-world situations. Limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.	7.NR.2.1 Compare two rational numbers and write statements using <i>is equal to</i> ($=$), <i>is not equal to</i> (\neq), <i>is less than</i> ($<$), <i>is greater than</i> ($>$), <i>is greater than or equal to</i> (\geq), and/or <i>is less than or equal to</i> (\leq) in mathematical and real-world situations.	8.NR.2.1 Compare real numbers and write statements using <i>is equal to</i> ($=$), <i>is not equal to</i> (\neq), <i>is less than</i> ($<$), <i>is greater than</i> ($>$), <i>is greater than or equal to</i> (\geq), or <i>is less than or equal to</i> (\leq).
6.NR.2.2 Sort a set of positive rational numbers in ascending and/or descending order in mathematical and real-world situations. Limit sets to no more than 5 numbers. Limit fractions to denominators of 2, 4, 5, 8, 10, 20, 25, 50, 100, and 200.	N/A	8.NR.2.2 Classify and order the subsets of real numbers in the number system including natural, whole, integer, rational, and irrational numbers.
6.NR.2.3 Represent quantities with integers in real-world situations and explain the meaning of zero.	N/A	N/A

Sixth Grade	Seventh Grade	Eighth Grade
6.NR.2.4 Identify and compare the opposite value and absolute value of positive and negative rational numbers.	N/A	N/A

Patterns, Algebra, and Functional Reasoning

Standard 1: Use tables, graphs, verbal descriptions, or equations to represent a function.

Sixth Grade	Seventh Grade	Eighth Grade
6.PAFR.1.1 Use tables, graphs, verbal descriptions, and equations to represent the relationship between independent and dependent variables of functions.	7.PAFR.1.2 Create a model with functions that address a proportional relationship in real-world situations.	8.PAFR.1.3 Determine if a graph, table, mapping, or verbal description is a function (linear or nonlinear) or not a function. 8.PAFR.1.5 Use multiple representations including mappings, tables, graphs, verbal description, and equations (only when linear) of two functions to compare the functions and draw conclusions.
6.PAFR.1.2 Identify the independent and dependent variable of a function in mathematical and real-world situations.	7.PAFR.1.3 Identify the constant of proportionality within proportional relationships.	8.PAFR.1.1 Define an equation in slope-intercept form ($y = mx + b$) as being a linear function. 8.PAFR.1.2 Identify and describe the constant rate of change and the y -intercept of a linear function.
N/A	7.PAFR.1.1 Apply proportional reasoning to solve problems in mathematical and real-world situations involving ratios and percentages.	N/A

Sixth Grade	Seventh Grade	Eighth Grade
N/A	N/A	8.PAFR.1.4 Describe the key features of given functions, including <i>domain</i> , <i>range</i> , <i>intervals of increasing or decreasing</i> , <i>constant</i> , <i>discrete</i> , <i>continuous</i> , and <i>intercepts</i> .
N/A	N/A	8.PAFR.1.6 Translate among the multiple representations, including mappings, tables, graphs, verbal description, and equations (only when linear) of a function.

Standard 2: Write, simplify, and evaluate algebraic expressions; write and solve algebraic equations and inequalities.

Sixth Grade	Seventh Grade	Eighth Grade
6.PAFR.2.1 Identify parts of an algebraic expression using the mathematical terms <i>sum</i> , <i>difference</i> , <i>term</i> , <i>variable</i> , <i>product</i> , <i>factor</i> , <i>quotient</i> , <i>coefficient</i> , and <i>constant</i> .	N/A	N/A
6.PAFR.2.2 Write and evaluate numerical expressions containing powers. Limit to positive whole number bases and positive whole number exponents.	N/A	N/A
6.PAFR.2.3 Evaluate numerical expressions with positive whole number bases and positive whole number exponents using the Order of Operations.	N/A	N/A

Sixth Grade	Seventh Grade	Eighth Grade
6.PAFR.2.4 Write and evaluate expressions using variables to represent quantities in mathematical and real-world situations.	7.PAFR.2.2 Write and evaluate expressions in one variable that model mathematical and real-world situations.	N/A
6.PAFR.2.5 Write and solve one-step equations and inequalities with one variable involving positive rational numbers in mathematical and real-world situations.	7.PAFR.2.1 Write and solve multi-step equations and inequalities in one variable involving rational numbers in mathematical and real-world situations.	8.PAFR.2.1 Solve multi-step one-variable equations and inequalities with variables on both sides with rational coefficients. 8.PAFR.2.2 Describe single-variable equations as having one solution, no solution, or an infinite number of solutions.
6.PAFR.2.6 Interpret the concept of a ratio as the relationship between two quantities, including part-to-part and part-to-whole.	N/A	N/A
6.PAFR.2.7 Explain the relationship between ratios and rates, including unit rates.	7.PAFR.2.3 Compute unit rates, including those involving complex fractions with like or different units.	8.PAFR.2.3 Identify the rate of change for a linear function as the slope of the line. 8.PAFR.2.4 Explain why the slope, m , is the same between any two distinct points on a linear graph.
6.PAFR.2.8 Solve ratio and rate problems in real-world situations.	N/A	N/A
N/A	N/A	8.PAFR.2.5 Given a table or a graph, identify the slope and the y -intercept of a line and write a linear equation to express that line.

Sixth Grade	Seventh Grade	Eighth Grade
6.PAFR.2.9 Use one-step dimensional analysis to convert units within the metric or customary systems.	7.PAFR.2.4 Use dimensional analysis to convert units between metric and customary systems.	N/A

Standard 3: Apply mathematical patterns, properties, and algorithms to the set of rational numbers to find sums, differences, products, and quotients and to write equivalent expressions.

Sixth Grade	Seventh Grade	Eighth Grade
6.PAFR.3.1 Represent the solutions of inequalities on a number line and explain that the solution set may contain an infinite number of solutions. Limited to the symbols for <i>is less than</i> (<) and <i>is greater than</i> (>).	N/A	N/A
6.PAFR.3.2 Identify the multiplicative inverse of a number and multiply multiplicative inverses to find their product is equal to 1.	N/A	N/A
6.PAFR.3.3 Identify the additive inverse of a number and add additive inverses to find their sum is equal to zero.	N/A	N/A

Sixth Grade	Seventh Grade	Eighth Grade
<p>6.PAFR.3.4 Apply the properties of operations to create equivalent algebraic expressions and justify the properties used. Limit properties to the <i>Identity, Inverse, Commutative, Associative, and Distributive Properties</i>.</p>	<p>7.PAFR.3.2 Identify linear expressions that are equivalent.</p> <p>7.PAFR.3.3 Recognize that algebraic expressions may have a variety of equivalent forms and determine an appropriate form for a given real-world situation.</p> <p>7.PAFR.3.4 Factor linear expressions with integer coefficients using the greatest common factor (GCF).</p>	<p>N/A</p>
<p>6.PAFR.3.5 Add, subtract, multiply, and divide integers in mathematical and real-world situations.</p> <p>6.PAFR.3.6 Add, subtract, multiply, and divide positive fractions, including mixed numbers in mathematical and real-world situations.</p> <p>6.PAFR.3.7 Add, subtract, multiply, and divide multi-digit positive decimals, up to the thousandths place, to solve problems in mathematical and real-world situations.</p>	<p>7.PAFR.3.5 Apply all operations with rational numbers to solve problems in mathematical and real-world situations.</p>	<p>N/A</p>

Sixth Grade	Seventh Grade	Eighth Grade
N/A	7.PAFR.3.1 Simplify numerical expressions that include integer exponents using the laws of exponents: the <i>Product of Powers</i> , <i>Quotient of Powers</i> , <i>Power of a Power</i> , <i>Power of a Product</i> , <i>Power of a Quotient</i> , <i>Zero Power</i> , and <i>Negative Exponent</i> .	8.PAFR.3.3 Apply laws of exponents to simplify algebraic expressions involving no more than three variables and integer exponents.
N/A	N/A	8.PAFR.3.1 Analyze patterns of perfect squares and perfect cubes to evaluate square roots and cube roots. Limit to square roots less than or equal to 400 and cube roots less than or equal to 1,000. 8.PAFR.3.2 Approximate non-perfect square roots and cube roots to the nearest tenth. Limit to square roots less than or equal to 400 and cube roots less than or equal to 1,000.