Fourth Grade Kansas College & Career Readiness Standards for MATH

Record keeping of implementation: PINK= WEEKLY (Once or Twice/Week) BLUE=DAILY (3 or MORE X/Week ALL OTHERS=Dates Listed

Operations and Algebraic Thinking: Using the four operations to solve problems																					
OA1	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.																				
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OA2	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.)*																				
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OA3	Solve multi-step word problem 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 situation equations and/or solution equations with a letter or symbol standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.																				
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Operations and Algebraic Thinking: Factors and multiples																					
OA4	Find all factor pairs for a whole number in the range 1 to 100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1 to 100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1 to 100 is prime or composite.																				
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Operations and Algebraic Thinking: Number and shape patterns																					
OA5	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.																				
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Number and Operations in Base Ten: Place value for multi-digit numbers																					
NBT1	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 $700 \div 70 = 10$ by applying concepts of place value and division.*																				
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NBT2	Read and write multi-digit whole numbers using base-ten numerals, number names, expanded form, and unit form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, <, =, and ≠ symbols to record the results of comparisons. (Note: Students should demonstrate																				
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NBT3	Use place value understanding to round multi-digit whole numbers to any place.																				
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Number and Operations in Base Ten: mulit-digit arithmetic.																					
NBT4	Fluently (efficiently, accurately, and flexibly) add and subtract multi-digit whole numbers using an efficient algorithm (including, but not limited to: traditional, partial-sums, etc.), based on place value understanding and the properties of operations.																				
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NBT5	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.																				

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NBT6 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.

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Number and Operations-Fractions: Fraction equivalence and ordering

NF1 Explain why a fraction a/b is equivalent to a fraction (nxa)/(nxb) 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.

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NF2 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., buy using a visual fraction models.

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Number and Operations-Fractions: Unit Fractions

NF3 Understand a fraction a/b with a > 1 as a sum of fractions 1/b.

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NF3a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.

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NF3b 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. Example: 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.

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NF3c Add and subtract mixed numbers with like denominators, *e.g. by replacing each mixed number with an equivalent fraction (simplest form is not an expectation), and/or by using properties of operations and the relationship between addition and subtraction.*

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NF3d 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.*

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NF4 Apply and extend previous understandings of multiplication (refer to **2.OA.3**, **2.OA.4**, **3.OA.1**, **3.NF.1**, **3.NF.2**) to multiply a fraction by a whole number.

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NF4a Understand a fraction a/b as a multiple of 1/b.

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NF4b Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number.

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NF4c Solve word problems involving multiplication of a fraction by a whole number

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Number and Operations-Fractions: Decimal Notation for Fractions

NF5 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.*

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NF6	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.*																											
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NF7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the relational symbols >, < =, or ≠, and justify the conclusions, *(e.g. by using a visual model.).*																											
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Measurement and Data: Measurement problems and unit conversions

MD1	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), …*																											
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MD2	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.																											
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MD3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems explaining and justifying the appropriate unit of measure. *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.*																											
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Measurement and Data: Working with Data

MD4	Make a data display (line plot, bar graph, pictograph) to show a 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 the data display. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection*																											
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Geometry: Identifying lines, angles, and shapes

G1	Draw points, lines, line segments, rays, angles (right, acute, obtuse, straight, reflex), and perpendicular and parallel lines. Identify these in two-dimensional figures.																											
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G2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles (right, acute, obtuse, straight, reflex). Recognize and categorize triangles based on angles (right, acute, obtuse, and equiangular) and/or sides (scalene, isosceles, and equilateral).																											
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G3	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.																											
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