

# 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

<b>Operations and Algebraic Thinking: Using the four operations to solve problems</b>																							
OA1	Interpret a multiplication equation as a comparison, e.g., interpret $35=5 \times 7$ 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 multistep 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 including rounding.																						
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<b>Operations and Algebraic Thinking: Factors and multiples</b>																							
OA4	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.																						
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<b>Operations and Algebraic Thinking: Number and shape patterns</b>																							
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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<b>Number and Operations in Base Ten: Place value for multi-digit numbers</b>																							
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 $700/70=10$ 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, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record the results of comparisons.																						
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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: multi-digit arithmetic.																			
NBT4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.																		
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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 numberators, 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., by using a visual fraction model.																		
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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	Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Ex: Express 3 in the form $3=3/1$ ; recognize that $6/1=6$ ; locate $4/4$ and one at the same point.																		
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NF3d	Compare two fractions with the same numerator or the same denominator by reasoning about their sizes. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols $>$ , $=$ , or $<$ , and justify the conclusions, e.g., by using visual fraction model.																		
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NF4	Apply and extend previous understandings of multiplication 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 100.4
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NF6	Use decimal notation for fractions with denominators 10 or 100.
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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 symbols $>$ , $=$ , or $<$ , and justify the conclusions
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Measurement and Data: Measurement problems and unit conversions	
MD1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
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MD2	Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction $a/b$ as the quantity formed by $a$ parts of size $1/b$ .
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MD3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.
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Measurement and Data: Working with Data	
MD4	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units - whole numbers, halves, or quarters.
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Measurement and Data: Angle Measurement	
MD5	Recognize area as an attribute of plan figures and understand concepts of area measurement.
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MD5a	A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
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MD5b	A plan figure which can be covered without gaps or overlaps by $n$ unit squares is said to have an area of $n$ square units.
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MD6	Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
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MD7	Relate area to the operations of multiplication and addition.
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<b>Geometry: Identifying lines, angles, and shapes</b>	
<b>G1</b>	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and square as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
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<b>G2</b>	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4
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<b>G3</b>	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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