Fifth 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: Numerical Expressions																									
OA1	**Use parentheses in numerical expressions and evaluate expressions with these symbols.**																								
dates ---->																									
OA2	**Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "multiply the sum of 8 and 7 by 2" as 2 x (8 + 7) because parenthetical information must be solved first. Recognize that 3 x (18,932 + 921) is three times as large as , without having to calculate the indicated sum or product.***																								
dates ---->																									
Number and Operations in Base Ten: Place Value System																									
NBT1	**Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.**																								
dates ---->																									
NBT2	**Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.**																								
dates ---->																									
NBT3	**Read, write, and compare decimals to thousandths.**																								
dates ---->																									
NBT3a	**Read and write decimals to thousandths using base-ten numerals, number names, expanded form, and unit form**																								
dates ---->																									
NBT3b	**Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.**																								
dates ---->																									
NBT4	**Use place value understanding to round decimals to any place (Note: In fifth grade, decimals include whole numbers and decimal fractions to the hundredths place.)**																								
dates ---->																									
Number and Operations in Base Ten: Operations with decimals up to hundredths																									
NBT5	**Fluently (efficiently, accurately, and flexibly) multiply multi-digit whole numbers using an efficient algorithm (ex., traditional, partial products, etc.) based on place value understanding and the properties of operations.**																								
dates ---->																									
NBT6	**Find whole-number quotients of whole numbers with up to four-digit dividends and two-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.**																								
dates ---->																									
NBT7	**Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.**																								
dates ---->																									
Number and Operations-Fractions: Adding and subtracting with equivalent fractions																									

NF1	Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 9/12 + 15/12 = 23/12 In general, a/b + c/d = (ad + bc)/bd*
dates ---->	
NF2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, (e.g. by using visual fraction models or equations to represent the problem.) Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 +1/2 = 3/7 by observing that 3/7 < 1/2.
dates ---->	
Number and Operations-Fractions: Multiplying and dividing fractions	
NF3	Interpret a fraction as division of the numerator by the denominator (a/b = a divided by b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, *e.g. by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*
dates ---->	
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, 4.NF.4) to multiply a fraction or whole number by a fraction.
dates ---->	
NF4a	Interpret the product (a/b) • q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a • q ÷ b. For example, use a visual fraction model to show 2/3 • 4 = 8/3 and create a story context for this situation. Do the same with 2/3 • 4/5 = 8/15.
dates ---->	
NF4b	Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
dates ---->	
NF5	Interpret multiplication as scaling (resizing), by:
dates ---->	
NF5a	Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication (e.g. They see (1/2 • 3) as half the size of 3.).
dates ---->	
NF5b	Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = na/nb to the effect of multiplying a/b by 1. *(e.g. Students may have the misconception that multiplication always produces a larger result. They need to have the conceptual understanding with examples like; 3/4 x one dozen eggs will have a product that is less than 12.)*
dates ---->	
NF6	Solve real world problems involving multiplication of fractions and mixed numbers, *(e.g. by using visual fraction models or equations to represent the problem)*
dates ---->	

NF7	**Apply and extend previous understandings of division (3.OA.2, 3.OA.5), to divide unit fractions by whole numbers and whole numbers by unit fractions. Division of a fraction by a fraction is not a requirement at this grade.**
dates ---->	
NF7a	**Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for 1/3 ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 1/3 ÷ 4 = 1/12 because 1/12 • 4 = 1/3.***
dates ---->	
NF7b	**Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ 1/5, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ 1/5 = 20 because 20 • 1/5 = 4.***
dates ---->	
NF7c	**Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, *e.g. by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3 cup servings are in 2 cups of raisins?***
dates ---->	
Measurement and Data: Unit Conversion	
MD1	**Convert among different-sized standard measurement units within a given measurement system *(e.g. convert 5 cm to 0.05 m),* and use these conversions in solving multi-step, real world problems.**
dates ---->	
Measurement and Data: Working with Data	
MD2	**Make a data display (line plot, bar graph, pictograph) to show a data set of measurements in fractions of a unit (1/2, 1/4, 1/8, 1/16). Use operations (add, subtract, multiply) on fractions for this grade to solve problems involving information presented in the data display. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally. After lunch everyone measured how much milk they had left in their containers. Make a line plot showing data to the nearest 1/4 cup. Which value has the greatest amount? What is the total?***
dates ---->	
Measurement and Data: Volume	
MD3	**Recognize volume as an attribute of solid figures and understand concepts of volume measurement.**
dates ---->	
MD3a	**A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.**
dates ---->	
MD3b	**A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.**
dates ---->	
MD4	**Measure volumes by counting unit cubes such as cubic cm, cubic in, cubic ft. or non-standard cubic units**
dates ---->	
MD5	**Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.**
dates ---->	
MD5a	**Find the volume of a right rectangular prism with <u>whole-number</u> side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent three-dimensional whole-number products as volumes, *(e.g. to represent the associative property of multiplication.)***

dates ---->																								
MD5b	**Apply the formulas V = l • w • h and V = B • h (*B represents the area of the base)* for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.**																							
dates ---->																								
MD5c	**Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.**																							
dates ---->																								
Geometry: Graphing points on the coordinate plane																								
G1	**Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond *(e.g. x-axis and x-coordinate, y-axis and y-coordinate)* .**																							
dates ---->																								
G2	**Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. *(e.g. plotting the relationship between two positive quantities such as maps, coordinate grid games (such as Battleship), time/temperature, time/distance, cost/quantity, etc.).***																							
dates ---->																								
Geometry: Classifying two-dimensional figures																								
G3	**Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.***																							
dates ---->																								
G4	**Classify two-dimensional figures in a hierarchy based on properties.**																							
dates ---->																								