Frankfort School District 157C
Math Curricular Expectations
Grade 5
- **Skills students should know and be able to do by the end of 5th grade**

Operations & Algebraic Thinking	Measurement & Data	Numbers & Operations in Base Ten	Geometry	Numbers & Operations/ Fractions
• Write simple expressions that record calculations with number, and interpret numerical expressions without evaluating them. For example, express the calculation "add 8 and 7, the multiply by 2 as 2 x (8+7). • Analyze patterns and relationships. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example: Given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain why this is so.	• Convert like measurement units within a given measurement system. • Convert among different-sized standard measurement units within a given measurement system. • Use these conversions in solving multi-step real world problems. • Represent and interpret data. • Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). • Use operations on fractions for this grade to solve problems involving information presented in line plots. • Understand concepts of volume and relate volume to multiplication and to addition by using and measuring solid figures • Understand concepts of volume and relate volume to multiplication and to addition by counting unit cubes, using appropriate unit measurements, and improvised unit • Understand concepts of volume and relate volume to multiplication and to addition by solving real world and mathematical problems • Use unit cubes to prove volume of a rectangular prism is the same as using the formula and show how volume demonstrates the associative property • Apply the formulas V = (I)(w)(H) and V = (b)(h) 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 • 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	• 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. • Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. • Read, write, and compare decimals to thousandths. • Read and write decimals to the thousandths using base ten numerals, number names and expanded form • Compare two decimals to thousandths based on meanings of the digits in each place, using >,=, and < symbols to record the results of comparisons • Use place value understanding to round decimals to any place. • Perform operations with multi-digit whole numbers and with decimals to hundredths • Add, subtract, 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. • Fluently multiply multi-digit whole numbers using the standard algorithm. • 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 array and/or area models • 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.	• Understand the components of and graph points on the coordinate plane to solve real-world and mathematical problems. • Interpret coordinate values of points in the context of a real world or mathematical situation • Understand and classify two-dimensional figures into categories based on their attributes and properties. • Classify two-dimensional figures in a hierarchy based on properties.	• 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 of fractions with like denominators. • 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. • Apply and extend previous understandings of multiplication and division to multiply and divide fractions. • 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. • 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. • Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. • Apply and extend previous understands of multiplication and division to multiply and divide fractions by interpreting multiplication as scaling (resizing) by: a. 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. • Apply and extend previous understands of multiplication and division to multiply and divide fractions by interpreting multiplication as scaling (resizing) by: b. Explaining 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):

				explaining 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/ = (nxa) to the effect of multiplying a/b/ by 1. • Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. • Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. • Interpret division of a unit a fraction by a non-zero whole number, and compute such quotients • Use the relationship between multiplication and division to explain that (1/3) /4 = 1/12 because (1/12) x 4 + 1/3. • Interpret division of a whole number by a unit fractions, and compute such quotients. •7b .Use the relationship between multiplication and division to explain that 4 / (1/5) = 20 because 20 x (1/5) = 4. • 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 • Apply and extend previous understanding of multiplication to multiply a fraction or whole number by a fraction. • Interpret the product (a/b) x q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations (a x q) /b • For example, use a visual fraction model to show (2/3) x 4 = 8/3, and create a story context of this equation. • Use the relationship between multiplication and division to explain that 4 / (1/5) = 20 because 20 x (1/5) = 4.