

# Frankfort School District 157C

## Math Curricular Expectations

### Grade 6

- Skills students should know and be able to do by the end of 6<sup>th</sup> grade

Number Sense & Systems	Geometry	Ratios and Proportions	Expressions/Equation/ Algebra/Functions	Statistics and Probabilities
<ul style="list-style-type: none"> <li>• Compute fluently with multi-digit numbers and find common factors and multiples. Fluently divide multi-digit numbers using the standard algorithm</li> <li>• Compute fluently with multi-digit numbers and find common factors and multiples. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.</li> <li>• Compute fluently with multi-digit numbers and find common factors and multiples. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.</li> <li>• Apply and extend previous understandings of numbers to the system of rational numbers. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.</li> <li>• Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.</li> <li>• Apply and extend previous understandings of multiplication and division to divide fractions by fractions. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.</li> </ul>	<ul style="list-style-type: none"> <li>• Solve real-world and mathematical problems involving area, surface area, and volume. Find area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.</li> <li>• Solve real-world and mathematical problems involving area, surface area, and volume. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.</li> <li>• Solve real-world problems involving area. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas <math>V = lwh</math> and <math>v=Bh</math> to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.</li> </ul>	<ul style="list-style-type: none"> <li>• Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. Understand ratio concepts and use reasoning to solve problems. Understand the concept of a ratio and use its language to describe a relationship between two quantities.</li> <li>• Understand ratio concepts and use reasoning to solve problems. Understand the concept of a unit rate <math>a/b</math> associated with a ratio <math>a:b</math> with <math>b \neq 0</math> (<math>b</math> not equal to zero), and use rate language in the context of a ratio relationship.</li> <li>• Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole given a part and the percent.</li> <li>• Understand ratio concepts and use reasoning to solve problems. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.</li> <li>• Solve unit rate problems including those involving unit pricing and constant speed.</li> <li>*Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.</li> </ul>	<ul style="list-style-type: none"> <li>• Apply and extend previous understandings of arithmetic to algebraic expressions.</li> <li>• Apply the properties of operations to generate equivalent expressions, use the distributive property and produce equivalent expressions.</li> <li>• Apply and extend previous understandings of arithmetic to algebraic expressions. Identify when two expressions are equivalent.</li> <li>• Reason and solve one-variable equations and inequalities. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</li> <li>• Reason and solve one-variable equations and inequalities. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</li> <li>• Reason and solve one-variable equations and inequalities. Write an inequality of the form <math>x &gt; c</math> or <math>x &lt; c</math> to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form <math>x &gt; c</math> or <math>x &lt; c</math> have infinitely many solutions; represent solutions of such inequalities on number line diagrams.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop understanding of statistical variability. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. Develop understanding of statistical variability. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.</li> <li>• Develop understanding of statistical variability. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.</li> <li>• Summarize and describe distributions. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.</li> <li>• Summarize and describe distributions. Summarize numerical data sets in relation to their context, such as by: -- a. Reporting the number of observations. -- b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. -- c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data was gathered. -- d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data was gathered.</li> </ul>

Frankfort School District 157C

Math Curricular Expectations

Grade 6

- Skills students should know and be able to do by the end of 6<sup>th</sup> grade

Number Sense & Systems	Geometry	Ratios and Proportions	Expressions/Equation/ Algebra/Functions	Statistics and Probabilities
<ul style="list-style-type: none"> <li>• Write, interpret, and explain statements of order for rational numbers in real-world contexts.</li> <li>• Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.</li> <li>• Apply and extend previous understandings of numbers to the system of rational numbers. Understand ordering and absolute value of rational numbers.</li> <li>• Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.</li> <li>• Distinguish comparisons of absolute value from statements about order.</li> <li>• Apply and extend previous understandings of numbers to the system of rational numbers. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.</li> </ul>			<ul style="list-style-type: none"> <li>• Reason and solve one-variable equations and inequalities. Solve real-world and mathematical problems by writing and solving equations using addition and multiplication using nonnegative rational numbers.</li> </ul>	