Frankfort School District 157C
Math Curricular Expectations
Grade: 7

- **Skills students should know and be able to do by the end of 7th grade**

Number Sense & Systems	Geometry	Ratios and Proportions	Expressions/Equation/ Algebra/Functions	Statistics and Probabilities
- Apply and extend the understanding of operation of rational numbers in regards to addition and subtraction. - Describe opposite quantities. - Understand absolute value as a distance from zero. - Understand subtraction of rational numbers as adding the additive inverse and show that the distance between two rational numbers is the absolute value of the difference. - Use properties of operation to add and subtract rational numbers. - Apply and extend the understanding of operation of rational numbers in regards to multiplication and division - Understand the distributive property with regards to rational numbers (fractions) and understand the rules for multiplying rational numbers (integers) - Understand that integers can be divided assuming the denominator is not zero. Interpret quotients of rational numbers by describing real-world contexts - Use properties of operations to multiply and divide - Convert a rational number (fraction) to a decimals - Solve the world problems with all four operations concerning rational numbers (fractions)	- Draw, construct, and describe geometrical figures and the relationship between them. *Solve problems involving scale drawings of geometric figures. Reproduce any figure with a given scale by computing actual dimensions. - Draw triangles free-hand with ruler, protractor, or technology based on given angle measurements, side lengths, or classifications based on its properties. - Name the three dimensional rectangular prisms and pyramids. Identify the bases and faces of three dimensional figures. - Solve real-life and mathematical problems involving angle measures, area, surface area, and volume. Know and use the formulas for area and circumference of a circle and the relationship between them. - Solve real-life and mathematical problems involving angle measures, area, surface area, and volume. Be able to use the properties of supplementary, complementary, vertical, and adjacent angles to solve multi-step problems. Write and solve simple equations of unknown angle in figure. - Solve real-world and mathematical problems involving area, volume, and surface area, and volume, and surface area of two and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.	- Analyze proportional relationships by computing unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units in real world problems. - Decide whether quantities are in proportional relationship both algebraically and graphing. - Represent proportional relationships by equations - Explain (x,y) on a graph of proportional relationship means in terms of the situation, with attention to the origin and (1,r) where r is the unit rate. - Recognize and represent proportional relationships between quantities in real-world and mathematical problems. - Identify the constant of proportionality in tables, graphs, equations, diagrams, and verbal descriptions of proportional relations. - Represent proportional relationships by equations - Use proportional relationships to solve multi step ratio and percent problems	- Use properties of operations to generate equivalent expressions and apply them to add, subtract, factor and expand linear expressions with rational coefficients. - Rewriting expressions in different forms using different verbal expressions. - Solving real life and multi step mathematical problems using algebraic expressions and equations using rational numbers. Use mental math and estimation to assess if an answer is reasonable. - Solving real life and multi step mathematical problems using algebraic expressions and equations with variable using rational numbers by writing simple equations and inequalities. - Solve word problems using distributive property while understanding the problem solving process - Solve word problems using inequalities and graph the solution and determine if answer is reasonable to context of the problem.	- Use random sampling to draw inferences about a population. Understand that generalizations about a population from a sample are valid only if the sample is representative of that population. - Use data from a random sample to draw inferences about an unknown population with an unknown characteristic of interest. Generate multiple samples of the same size to gauge the variation in estimates and predictions. - Draw informal comparative inferences about two populations. Calculate and compare the mean and the mathematical relationship between the two populations. - Investigate chance processes and develop, use, and evaluate probability models. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. - Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency. Predict the approximate development frequency given the probability. - Develop, use, and compare a probability model to find probabilities of events. If agreement is not good, explain discrepancy. - Develop and use a uniform probability model by assigning equal probability to all outcomes to determine the probability of events. *Develop a probability model which may not be uniform by observing frequencies in data generated from a chance process. - Investigate chance processes and develop, use, and evaluate probability models. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. - Understand the probability of a compound event is the fraction of outcomes in a sample space for which the event occurs. - Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams. Identify the outcomes in the sample space. - Design and use a simulation to generate frequencies for compound events.