7th Grade Math Content Priority Academic Student Skills

Standard 1: Algebraic Reasoning: Patterns and Relationships - The student will use number properties and algebraic reasoning to identify, simplify, and solve simple linear equations and inequalities.	
7.1.1	Identify, describe, and analyze functional relationships (linear and nonlinear) between two variables (e.g., as the value of x increases on a table, do the values of y increase or decrease, identify a positive rate of change on a graph and compare it to a negative rate of change).
7.1.2	Write and solve two-step equations with one variable using number sense, the properties of operations, and the properties of equality (e.g., -2x + 4 = -2).
7.1.3	Inequalities: Model, write, solve, and graph one-step linear inequalities with one variable.
Standard 2: Number Sense and Operation - The student will use numbers and number relationships to solve a variety of problems.	
7.2.1.a	Number Sense - Compare and order positive and negative rational numbers.
7.2.1.b	Build and recognize models of perfect squares to find their square roots and estimate the square root of other numbers (e.g., the square root of 12 is between 3 and 4).
7.2.1c*	Demonstrate the concept of ratio and proportion with models (e.g., similar geometric shapes, scale models).
7.2.2a	Number Operations - Solve problems using ratios and proportions.
7.2.2b	Number Operations - Solve percent application problems (e.g., discounts, tax, finding the missing value of percent/part/whole).
7.2.2c	Number Operations - Simplify numerical expressions with integers, exponents, and parentheses using order of operations.
Standard 3: Geometry - The student will apply the properties and relationships of plane geometry in a variety of contexts.	
7.3.1	Classify regular and irregular geometric figures including triangles and quadrilaterals according to their sides and angles.
7.3.2	Identify and analyze the angle relationships formed by parallel lines cut by a transversal (e.g., alternate interior angles, alternate exterior angles, adjacent, and vertical angles).
7.3.3	Construct geometric figures and identify geometric transformations on the rectangular coordinate plane (e.g., rotations, translations, reflections, magnifications).
Standard 4: Measurement - The student will use measurement to solve problems in a variety of contexts.	
7.4.1	Develop and apply the formulas for perimeter and area of triangles and quadrilaterals to solve problems.
7.4.2	Apply the formula for the circumference and area of a circle to solve problems.
7.4.3	Find the area and perimeter of composite figures to solve application problems.
Standard 5: Data Analysis - The student will use data analysis, probability, and statistics to interpret data in a variety of contexts.	
7.5.1	Data Analysis - Compare, translate, and interpret between displays of data (e.g., multiple sets of data on the same graph, data from subsets of the same population, combinations of diagrams, tables, charts, and graphs).
7.5.2	Probability - Determine the probability of an event involving “or”, “and”, or “not” (e.g., on a spinner with one blue, two red and two yellow sections, what is the probability of getting a red or a yellow?).
7.5.3	Central Tendency - Compute the mean, median, mode, and range for data sets and understand how additional data or outliers in a set may affect the measures of central tendency.

7th Grade Math Process Priority Academic Student Skills

Process Standard 1: Problem Solving	
MS.1.1	Develop and test strategies to solve practical, everyday problems which may have single or multiple answers.
MS.1.2	Use technology to generate and analyze data to solve problems.
MS.1.3	Formulate problems from situations within and outside of mathematics and generalize solutions and strategies to new problem situations.
MS.1.4	Evaluate results to determine their reasonableness.
MS.1.5	Apply a variety of strategies (e.g., restate the problem, look for a pattern, diagrams, solve a simpler problem, work backwards, trial and error) to solve problems, with emphasis on multistep and non-routine problems.
MS.1.6	Use oral, written, concrete, pictorial, graphical, and/or algebraic methods to model mathematical situations.
Process Standard 2: Communication	
MS.2.1	Discuss, interpret, translate (from one to another) and evaluate mathematical ideas (e.g., oral, written, pictorial, concrete, graphical, algebraic).
MS.2.2	Reflect on and justify reasoning in mathematical problem solving (e.g., convince, demonstrate, formulate).
MS.2.3	Select and use appropriate terminology when discussing mathematical concepts and ideas.
Process Standard 3: Reasoning	
MS.3.1	Identify and extend patterns and use experiences and observations to make suppositions.
MS.3.2	Use counter examples to disprove suppositions (e.g., all squares are rectangles, but are all rectangles squares?).
MS.3.3	Develop and evaluate mathematical arguments (e.g., agree or disagree with the reasoning of other classmates and explain why).
MS.3.4	Select and use various types of reasoning (e.g., recursive [loops], inductive [specific to general], deductive [general to specific], spatial, and proportional).
Process Standard 4: Connections	
MS.4.1	Apply mathematical strategies to solve problems that arise from other disciplines and the real world.
MS.4.2	Connect one area or idea of mathematics to another (e.g., relates equivalent number representations to each other, relate experiences with geometric shapes to understanding ratio and proportion).
Process Standard 5: Representation	
MS.5.1	Use a variety of representations to organize and record data (e.g., use concrete, pictorial, and symbolic representations).
MS.5.2	Use representations to promote the communication of mathematical ideas (e.g., number lines, rectangular coordinate systems, scales to illustrate the balance of equations).
MS.5.3	Develop a variety of mathematical representations that can be used flexibly and appropriately (e.g., base-10 blocks to represent fractions and decimals, appropriate graphs to represent data).
MS.5.4	Use a variety of representations to model and solve physical, social, and mathematical problems (e.g., geometric objects, pictures, charts, tables, graphs).