



<u>Course Title:</u> Seventh Grade Math		
<u>Description:</u> Seventh grade math focuses on four critical areas: <ul style="list-style-type: none"> • Developing understanding of and applying proportional relationships • Operations with real numbers and working with expressions and linear equations • Solving problems involving scale drawings, geometric constructions, and surface area, and volume • Drawing inferences about populations 		
<i>Numbers and Quantity</i>		
<u>Reporting Topic</u>	<u>Grade Level Standards</u>	<u>Competency Statement</u>
<u>Ratios</u>	<ul style="list-style-type: none"> • Recognize and represent proportional relationships between quantities. (7.RP.A.2) • Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. (7.RP.A.3) 	Students will use proportional relationships to solve ratio and percent problems.
<u>Unit Rates</u>	<ul style="list-style-type: none"> • Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. (7.RP.A.1) 	Students will compute unit rates associated with ratios.
<i>Operations and Algebraic Thinking</i>		
<u>Reporting Topic</u>	<u>Grade Level Standards</u>	<u>Competency Statement</u>
<u>Addition and Subtraction</u>	<ul style="list-style-type: none"> • Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram. (7.NS.A.1) • Solve real-world and mathematical problems involving the four operations with rational numbers. (7.NS.A.3) 	Students will add and subtract rational numbers, as well as, solve real world problems with rational numbers.



<u>Multiplication and Division</u>	<ul style="list-style-type: none"> • Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. (7.NS.A.2) • Solve real-world and mathematical problems involving the four operations with rational numbers. (7.NS.A.3) 	Students will multiply and divide rational numbers, as well as, solve real world problems with rational numbers.
<u>Expressions and Equations</u>	<ul style="list-style-type: none"> • Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. (7.EE.A.1) • Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. (7.EE.A.2) 	Students will use algebraic equations to solve for an unknown value, checking the reasonableness of my answer
<u>Equations and Inequalities</u>	<ul style="list-style-type: none"> • Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. (7.EE.B.3) • Use variables to represent quantities in a real world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. (7.EE.B.4) 	Students will solve real life and mathematical problems using numerical and algebraic expressions and equations.
<i>Geometry</i>		
<u>Reporting Topic</u>	<u>Grade Level Standards</u>	<u>Competency Statement</u>
<u>Shapes</u>	<ul style="list-style-type: none"> • Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. (7.G.A.2) • Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. (7.G.A.3) 	Students will draw, construct, and describe geometrical figures and the relationship between them.



<u>Area</u>	<ul style="list-style-type: none"> Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. (7.G.A.1) Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. (7.G.B.4) Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.B.6) 	Students will solve real world and mathematical problems involving area of 2D and 3D objects, as well as, explain how the formulas for area and circumference of a circle are created.
<u>Surface Area</u>	<ul style="list-style-type: none"> Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.B.6) 	Students will solve real world problems involving surface area of 3D objects.
<u>Volume</u>	<ul style="list-style-type: none"> Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.B.6) 	Students will solve real world problems involving volume of 3D objects.
<u>Scale Drawings</u>	<ul style="list-style-type: none"> Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. (7.G.A.1) 	Students will solve problems involving scale drawings of geometric figures.
<u>Angles</u>	<ul style="list-style-type: none"> Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. (7.G.B.5) 	Students will solve simple equations to find an unknown angle in a figure.
<i>Measurement, Data, Statistics, and Probability</i>		
<u>Reporting Topics</u>	<u>Grade Level Standards</u>	<u>Competency Statement</u>



<u>Data Distributions</u>	<ul style="list-style-type: none">• Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability (7.SP.B.3)• Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. (7.SP.B.4)	Students will draw informal comparative inferences about two populations.
<u>Random Sampling</u>	<ul style="list-style-type: none">• Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences (7.SP.A.1)• Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. (7.SP.A.2)	Students will use random sampling to draw inferences about a population
<u>Probability</u>	<ul style="list-style-type: none">• 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. (7.SP.C.5)• Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability (7.SP.C.6)• Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. (7.SP.C.7)• Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. (7.SP.C.8)	Students will investigate chance processes and develop, use, and evaluate probability models.