GRADE 7

Domain	Code	Standard Description	Essential Vocabulary
Expressions and Equations	7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients with an emphasis on writing equivalent expressions.	equivalent expressions
	7.EE.3	Solve multi-step real-life and mathematical problems posed with rational numbers in any form (positive and negative, fractions, decimals, and integers), using tools strategically. Apply properties of operations to calculate with numbers in any form. Convert between forms as appropriate. Assess the reasonableness of answers using mental computation and estimation strategies.	convert
	7.EE.4	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. a) Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where $p, q,$ and r are specific rational numbers. Solve equations of these forms fluently. Compare the algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. b) Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where $p, q,$ and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.	variables, inequalities
Geometry	7.G.1	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.	scale drawing
	7.G.4	Know the formulas for the area and circumference of a circle and use them to solve problems. Informally derive the relationship between the circumference and area of a circle.	area, circumference
	7.G.5	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve equations for an unknown angle in a figure.	supplementary, complementary, adjacent, vertical

	7.G.6	Solve real world and mathematical problems involving area of two-dimensional figures composed of polygons and/or circles, including composite figures. Use nets to solve real world and mathematical problems involving surface area of prisms and cylinders, including composite solids. Solve real world and mathematical problems involving volumes of right prisms, including composite solids.	area, surface area, net, solid, composite solid

The Number System	7.NS.1	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.
		  a) Describe situations in which opposite quantities combine to make 0.
		  b) Understand $p + q$ as the number located a distance $|q|$ from p on a number line, in the direction indicated by the sign of q.
		     Show that a number and its opposite have a sum of 0 (are additive inverses).
		     Interpret sums of rational numbers by describing real world contexts.
		  c) Understand subtraction of rational numbers as adding the additive inverse, $p - q = p +(-q)$.
		     Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real world contexts.
		  d) Apply properties of operations as strategies to fluently add and subtract rational numbers.
			additive inverses, integer, rational number

	7.NS.2	Apply and extend previous understandings of multiplication, division, and fractions to multiply and divide rational numbers.
		  a) Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1)=1$ and the rules for multiplying rational numbers.Interpret products of rational numbers by describing real world contexts.
		  b) Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = -p/q = p/-q$.
		     Interpret products of rational numbers by describing real world contexts.
		  c) Apply properties of operations as strategies to fluently multiply and divide rational numbers.
		  d) Convert a rational number to a decimal using long division.
		     Know that the decimal form of a rational number terminates or eventually repeats.
			terminates, repeats

	7.NS.3	Solve real world and mathematical problems involving the four operations with rational numbers.	
Ratios and Proportional Relationships	7.RP.1	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	Used in 6th Grade

	7.RP.2	Recognize and represent proportional relationships between quantities.
		    a) Decide whether two quantities are in a proportional relationship by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
		    b) Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
		    c) Represent proportional relationships by equations.
		    d) Explain what a point (x,y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0,0)$ and $(1,r)$ where r is the unit rate.
			proportions, equivalent ratio

	7.RP.3	Use proportional relationships to solve multi-step ratio and percent problems.	
Statistics and Probability	7.SP.5	Understand that the probability of a chance event is a number from 0 through 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 ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.	likelihood, unlikely, probability, chance, outcome

	7.SP.7	Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies. If there is a discrepancy, explain possible sources.
		    a) Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.
		    b) Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.
			frequency, outcome

7.SP.8	Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
	  a) Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
	  b) Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams.
	      For an event described in everyday language (such as "rolling double sixes"), identify the outcomes in the sample space which compose the event.
	  c) Design and use a simulation to generate frequencies for compound events.
		compound, tree diagram, list, table, simulation