CURRICULUM MAPPING Advanced Math GRADE 7

Unit/Time	CONTENT	SKILLS	ASSESSMENTS	CCMS	VOCABULARY
Unit #1 *(4-5 weeks)* **August through September*	**Ratios and Proportionality**	*Students will be able to…* • Compute unit rates involving rational numbers, fractions, and complex fractions. (7.RP.1) • Compute ratios of length in like or different units. (7.RP.1) • Compute ratios of area and other measurements in like or different units. (7.RP.1) • Determine whether two quantities are in a proportional relationship by using a table and or graph. (7.RP.2) • Identify the constant of proportionality (unit rate) in tables, graphs, diagrams, and verbal descriptions. (7.RP.2) • Create and solve equations to represent proportional relationships. (7.RP.2) • Use words to describe the location of a point on a graph and its relationship to the origin. (7.RP.2) • Explain what a point on a graph of a proportional relationship means in terms of the situation. (how does the one quantity relate to the other) (7.RP.2) *Some students may be ready to…* • Analyze proportional relationships and use them to solve real-world and mathematical problems**.** (Compute unit rates. Recognize, represent and explain proportional relationships using tables, graphs, equations, diagrams and verbal descriptions. Use proportional	Observation Participation Manipulative Guided Practice Independent Practice Worksheets Projects Quizzes Tests	**Analyze proportional relationships and use them to solve real-world and mathematical problems** ▪ 7.RP.1 Compute unit rates associates with rations of fractions, including ratios of lengths, areas, and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction $^{1/2}/_{1/4}$ miles per hour, equivalently 2 miles per hour.* ▪ 7.RP.2 Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., 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. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.* 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.	**Critical Terms:** Simple Interest Percent increase Percent decrease Commission Percent error Rate of change Gratuity **Supplemental Terms:** Tax Tip Ratio Rate Proportion Percent Unit rate Equivalency Greatest Common Factor (GCF) Least Common Multiple (LCM)

		relationships to solve multi-step ratio and percent problems.) *(7.RP.1-3)* • Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. *(7.NS.1-3)* • Apply properties of operations as strategies to add, subtract, factor and expand linear expressions with rational coefficients. *(7.EE.1)* • Solve real-life and mathematical problems using numerical and algebraic expressions and equations. *(7.EE.3-4)*			
Unit/Time	**CONTENT**	**SKILLS**	**ASSESSMENTS**	**CCMS**	**VOCABULARY**
Unit #2 *(2-3 weeks)* *September -October*	Ratio and Proportion Applications	*Students will be able to…* • Solve multi-step ratio and percent problems. (7.RP.3) • Solve problems involving simple interest and tax. (7.RP.3) • Solve problems involving markups and markdowns, gratuities and commissions, and fees. (7.RP.3) • Solve problems involving percent increase, percent decrease, and percent (margin of) error. (7.RP.3) • Solve problems involving scale drawings of geometric figures. (7.G.1) • Compute actual lengths and areas from a scale drawing. (7.G.1) • Reproduce a scale drawing at a different scale. (7.G.1) *Some students may be ready to…* • Understand the connections between proportional relationships to interpret unit rate as the slope of the graph (8.EE.5)	Observation Participation Manipulatives Guided Practice Independent Practice Worksheets Projects Quizzes Tests	**Analyze proportional relationships and use them to solve real-world and mathematical problems.** ▪ 7. RP.3 Use proportional relationships to solve multi-step ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.* **Draw, construct, and describe geometrical figures and describe the relationships between them.** ▪ 7.G.1 Solve problems involving scale drawing of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing in a different scale.	**Critical Terms:** Ratio Proportion Percent increase Percent decrease Percent error Markdowns Markups Scale **Supplemental Terms:** Tax Gratuity Area Volume Simple interest equivalent

		• Proportional relationships can be applied to solve congruence and similarity applications. (8.G.2)			
Unit/Time	**CONTENT**	**SKILLS**	**ASSESSMENTS**	**CCMS**	**VOCABULARY**
Unit #3 *(5-6 weeks)* *October through Mid-December*	Rational Number Operations	*Students will be able to…* • Add and subtract rational numbers. (7.NS.1) • Represent addition and subtraction on a horizontal or vertical number line diagram. (7.NS.1) • Use words, visuals and symbols to describe situations in which opposite quantities combine to make 0. (7.NS.1) • Represent addition of quantities with symbols, visuals and words by showing positive or negative direction from one quantity to the other. (7.NS.1) • Show that a number and its opposite have a sum of 0 using visuals, symbols, words and real-world contexts. (7.NS.1) • Use the term "additive inverse" to describe 2 numbers whose sum is zero. (7.NS.1) • Use commutative, distributive, associative, identity, and inverse properties to add and subtract rational numbers. (7.NS.1) • Use the term "absolute value" to describe the distance from zero on number line diagram and with symbols. (7.NS.1) • Multiply and divide rational numbers. (7.NS.2) • Use the distributive property to multiply positive and negative rational numbers using symbols, visuals, words and real-life contexts. (7.NS.2) • Interpret products of rational numbers by describing real-world contexts. (7.NS.2) • Identify situations when integers can and cannot be divided. (7.NS.2) • Use words and real-world contexts to explain why the quotient of two integers is a rational number. (7.NS.2) • Identify and apply properties used when multiplying and dividing rational numbers. (7.NS.2)	Observation Participation Manipulative Guided Practice Independent Practice Worksheets Projects Quizzes Test	**Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.** ▪ 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. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.* b) Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. 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 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 add and subtract rational numbers. ▪ 7. NS.2 Apply and extend previous	**Critical Terms:** Commutative Property Distributive Property Integers Negative Numbers Opposites Positive Numbers Income/Profit **Supplemental Terms:** Absolute Value Additive Inverse Associative Property Expanding Factoring Quadrant I, II, III, IV Order of Operations Rational Numbers

		• Convert a rational number to a decimal using long division. (7.NS.2) • Identify terminating or repeating decimal representations of rational numbers. (7.NS.2) • Solve real world and mathematical problems involving the four operations with rational numbers. (7.NS.3) *Some students may be ready to…* • Know that there are numbers that are not rational, and approximate them by rational numbers. (8.NS.1-2) • Interpret and apply positive and negative slopes of lines and positive and negative coefficients in equations; develop understanding of square roots and irrational numbers. • Understand relationships between positive and negative coefficients or values for variables; use positive and negative integers to communicate directions in two dimensions. • Evaluate algebraic expressions involving positive and negative coefficients or values for variables; interpret isometrics in the plane given in symbolic form. • Graph equations on coordinate grids; locate square roots on the number line. • Use the properties and order of operations to write equivalent expressions and solve equations.		understandings of multiplication and division and of 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 signed 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/1) = (-p)/q = p/(-q).* Interpret quotients of rational numbers by describing real-world contexts. c) Apply properties of operations as strategies to 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 in 0s or eventually repeats. ▪ 7. NS.3 Solve real-world and mathematical problems involving the four operations with rational number.	Area Coordinate Grid Decimals Expressions Fact Family Fractions Mathematical Sentence Number Line Number Sentence Operations Ordered Pair Variable

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Unit #4 *(2-3 Weeks)* December -January	**Expressions**	*Students will be able to …* Use Commutative, Associative, Distributive, Identity, and Inverse Properties to add and subtract linear expressions with rational coefficients. (7.EE.1) • Use Commutative, Associative, Distributive, Identity, and Inverse Properties to factor and expand linear expressions with rational coefficients. (7.EE.1) • Rewrite an expression in a different form. (7.EE.2) • Choose the form of an expression that works best to solve a problem. (7.EE.2) • Explain your reasoning for the choice of expression used to solve a problem. (7.EE.2) *Some students may be ready to…* • Solve real-life and mathematical problems using numerical and algebraic expressions and equations. (7.EE.3-4)	Observation Participation Manipulatives Guided Practice Independent Practice Worksheets Projects Quizzes Tests	**Standard(s):** **Use properties of operations to generate equivalent expressions** ▪ 7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. ▪ 7.EE.2 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. *For example, a +0.05a = 1.05a means that "increase by 5% is the same as multiply by 1.05."*	**Critical Terms:** Distributive Property Commutative Property Associative Property Multiplicative Property of Zero Variable Numerical expression Algebraic expression Term Coefficient Constant Equation Inequality **Supplemental Terms:** Algebra Property Order of operations Evaluate Simplest form
Unit/Time	**CONTENT**	**SKILLS**	**ASSESSMENTS**	**CCMS**	**VOCABULARY**
Unit #5 *(4-5 weeks)* January-February	**Equations**	*Students will be able to …* • Use commutative, associative, distributive, identity, and inverse properties to calculate with numbers in any form (whole numbers, fractions and decimals). (7.EE.3) • Convert between rational number forms	Observation Participation Manipulatives Guided Practice Independent	**Solve real-life and mathematical problems using numerical and algebraic expressions and equations.** ▪ 7.EE.3 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	**Critical Terms:** Linear Coefficient Factored form Circumference Combining like terms

		(whole numbers, fractions and decimals) to solve problems as appropriate. (7.EE.3) • Solve multi-step mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. (7.EE.3) • Solve multi-step real-life problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. (7.EE.3) • Use mental computation and estimation strategies to assess the reasonableness of the answer. (7.EE.3) • Translate words or real-life situations into variable equations. (7.EE.4) • Translate words or real-life situations into variable inequalities. (7.EE.4) • Solve one- or two-step equations with rational numbers fluently. (7.EE.4) • Solve word problems leading to one- or two-step equations with rational numbers. (7.EE.4) • Construct simple equations and inequalities with rational numbers to solve problems. (7.EE.4) • Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. (7.EE.4) • Solve word problems leading to one- or two-step inequalities with rational numbers. (7.EE.4) • Graph the solution set of inequalities and interpret it in the context of the problem. (7.EE.4) • Know the formulas for the area and	Practice Worksheets Projects Quizzes Tests	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. *For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50 for a new salary of $27.50. If you want to place a towel bar 9 ¾ inches long in the center of a door that is 27 ½ inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.* ▪ 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 an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?* 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. *For example, As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at*	Inverse operation Rate of change **Supplemental Terms:** Evaluate Expression Equivalent Rational number Commutative property Associative property Distributive property Identity properties Expanded form Equation Inequality Circle Term

		circumference of a circle. (7.G.4) • Use the formulas for area and circumference of a circle to solve problems. (7.G.4) • Informally, derive the area formula for a circle based on circumference. (7.G.4) *Some students may be ready to…* • Graph linear relationships and interpret slope (8.EE.5)		*least $100. Write an inequality for the number of sales you need to make, and describe the solutions.* **Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.** ▪ 7.G.4 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.	
Unit/Time	**CONTENT**	**SKILLS**	**ASSESSMENTS**	**CCMS**	**VOCABULARY**
Unit #6 *(2- 4 weeks)* *February-March*	**Data Distributions**	*Students will be able to…* • Recognize and identify that different sampling techniques must be used in real life situations, because it is very difficult to survey an entire population. (7.SP.1) • Select appropriate sample sizes based on a population in real-life situations and explain why generalizations about a population from a sample are valid only if the sample is random and representative of that population. (7.SP.1) Collect data from a sample population in order to predict information about a population. (7.SP.1) • Interpret data from a random sample to draw inferences about a population with an unknown characteristic of interest. (7.SP.2) Generate multiple samples (or simulated samples) of the same size to determine the variation in estimates or predictions by comparing the samples. (7.SP.2) • Identify the degree of overlap between two numerical sets of data. (7.SP.3) • Visually compare two numerical data distributions with like ranges. (7.SP.3) Measure the difference between the centers of two different data distributions and express this difference as a multiple of a measure of variability. (7.SP.3)	Observation Participation Manipulatives Guided Practice Independent Practice Worksheets Projects Quizzes Tests	**Use random sampling to draw inferences about a population.** ▪ 7.SP.1 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.2 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. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.* **Draw informal comparative inferences about two populations**	**Critical Terms:** Random sample Biased sample Unbiased sample Histogram Box plot Dot plot Double box plot Double dot plot **Supplemental Terms:** Statistics Mean Median Mode

		• Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. (7.SP.4) *Some students may be ready to…* • Investigate patterns of association in bivariate data (8.SP.1-4)		▪ 7.SP.3 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. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.* 7.SP.4 Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.*	
Unit/Time	**CONTENT**	**SKILLS**	**ASSESSMENTS**	**CCMS**	**VOCABULARY**
Unit #7 *(2-3 weeks)* **March-April*	**Probability**	*Students will be able to…* • Represent the probability of a chance event as a number between 0 and 1. (7.SP.5) • Use the terms "likely", "unlikely," to describe the probability represented by the fractions used. (7.SP.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. (7.SP.6) • Predict the approximate relative frequency of a chance event given the probability. (7.SP.6) • Develop a uniform probability model by assigning equal probability to all outcomes,	Observation Participation Manipulatives Guided Practice Independent Practice Worksheets Projects Quizzes Tests	**Investigate chance processes and develop, use and evaluate probability models.** ▪ 7.SP.5 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 ½ indicates an event that in neither unlikely nor likely, and a probability near 1 indicates a likely event. ▪ 7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency,	**Critical Terms** Simulation Compound event Probability Sample space Random sample Outcome Theoretical probability Experimental probability Relative Frequency

		and use the model to determine probabilities of events. (7.SP.7) • Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. (7.SP.7) • Compare probabilities from a model to observed frequencies. (7.SP.7) • If the agreement between a model and observed frequencies is not good, explain possible sources of the discrepancy. (7.SP.7) • Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. (7.SP.8) • Represent the probability of a compound event as the fraction of outcomes in the sample space for which the compound event occurs. (7.SP.8) • Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. (7.SP.8) • For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. (7.SP.8) • Design and use a simulation to generate frequencies for compound events. (7.SP.8) *Some students may be ready to…* • Understand independence and conditional probability and use them to interpret data. (S-CP.1-5) • Use the rules of probability to compute probabilities of compound events in a uniform probability model. (S-CP.6-7)		and predict the approximate relative frequency given the probability. *For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.* ▪ 7.SP.7 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. a) Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.* b) Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed* ▪ 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	Tree diagram Likelihood Counting Principle Uniform probability model **Supplemental Terms** Empirical probability Equally likely More likely Less likely Fair Unfair Simple event Fraction Decimal Percent Combination Permutation Dependent Event Independent Event Complementary Event Relative frequency

				compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event. Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*	
Unit/Time	**CONTENT**	**SKILLS**	**ASSESSMENTS**	**CCMS**	**VOCABULARY**
Unit #8 *(4-5 weeks)* **April-May*	Geometric Measurement	*Students will be able to…* • Use freehand, ruler, protractor and technology to draw geometric shapes with given conditions. (7.G.2) • Construct triangles from 3 measures of angles or sides. (7.G.2) • Given conditions, determine what and how many type(s) of triangles are possible to construct. (7.G.2) • Describe the two-dimensional figures that result from slicing three-dimensional figures (right rectangular prisms and right rectangular pyramids). (7.G.3) • Identify and describe supplementary, complementary, vertical, and adjacent angles. (7.G.5) • Use understandings of supplementary, complementary, vertical and adjacent angles to write and solve equations. (7.G.5) • Explain (verbally and in writing) the relationships between the angles formed by two intersecting lines. (7.G.5)	Observation Participation Manipulatives Guided Practice Independent Practice Worksheets Projects Quizzes Tests	**Draw, Construct, and describe geometrical figures and describe the relationships between them.** ▪ 7.G.2 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.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. **Solve real-life and mathematical problems in involving angle measure, area, surface area, and volume** ▪ 7.G.5 Use facts about supplementary, complementary, vertical, and adjacent angles in multi-step problem to write and solve simple equations for an unknown angle in a figure.	**Critical Terms:** Three-dimensional Two-dimensional Surface area volume Intersecting lines Vertex Complementary angles Supplementary angles Cross-sections Right rectangular prism Right rectangular

		• Solve 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.6) • Solve real-world problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. (7.G.6) *Some students may be ready to…* • Understand congruence and similarity using physical models, transparencies, or geometry software. (8.G.1-5) • Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. (8.G.9)		7.G.6 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.	pyramid Constructions Virtual manipulative Cube Planar section Compose Decompose **Supplemental Terms:** Nets Volume Area Polygon Pyramid Prism Triangle Angle Right angle Obtuse angle Degrees Acute angle Angle measure Line segment Prism Pyramid Plane

Unit/Time	CONTENT	SKILLS	ASSESSMENTS	CCMS	VOCABULARY
Unit #1 *(5-6 weeks)* **August through September*	**Real Numbers and Exponents**	*Students will be able to…* • Distinguish between rational and irrational numbers. (8.NS.1) • Convert a decimal expansion which repeats eventually into a rational number. (8.NS.1) • Find rational approximations of irrational numbers. (8.NS.2) • Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions.(8.NS.2) • Evaluate square roots of small perfect squares and cube roots of small perfect cubes. (8.EE.2) • Use square root and cube root symbols to solve and represent solutions of equations. (8.EE.2) • Apply the properties of integer exponents to generate equivalent numerical expressions. (8.EE.1) • Estimate very large or very small quantities using a single digit times a power of ten. (8.EE.3) • Express how much larger one number expressed as a single digit times a power of ten is than another in the context of the situation. (8.EE.3) • Express numbers in scientific notation. (8.EE.4) • Perform operations with numbers expressed in scientific notation and a mix of scientific notation and decimal	Observation Participation Manipulatives Guided Practice Independent Practice Worksheets Projects Quizzes Tests	**Know that there are numbers that are not rational, and approximate them by rational numbers.** ▪ 8.NS.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. ▪ 8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). *For example, by truncating the decimal expansion of* $\sqrt{2}$*, show that* $\sqrt{2}$ *is between* 1 *and* 2*, then between* 1.4 *and* 1.5*, and explain how to continue on to get better approximations.* **Work with radicals and integer exponents.** ▪ 8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = \frac{1}{33} = \frac{1}{27}$. ▪ 8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational. ▪ 8.EE.3 Use numbers expressed in	**Critical Terms:** Exponent Scientific notation Radical Irrational number Rational number Square root Cube root Perfect cube Perfect square **Supplemental Terms:** Repetend Equation Expression Variable Property Unknown Solution Integer Inverse operations

		notation. (8.EE.4) • Choose appropriate units of measurements for a given number in scientific notation. (8.EE.4) • Interpret scientific notation that has been generated by technology. (8.EE.4) *Some students may be ready to…* • Identify real and complex numbers through the introduction of $i = \sqrt{-1}$. • Reduce irrational numbers to simplest radical form. ($\sqrt{24} = 2\sqrt{6}$). • Rationalizing fractions with a square root in the denominator. • Multiply and divide monomials. $((2x^{-3}y^5z)(3x^5y^{-3})$ *or* $(2x^{-3}y^5z)/(3x^5y^{-3}))$.		the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as* 3×10^8 *and the population of the world as* 7×10^9*, and determine that the world population is more than* 20 *times larger.* ▪ 8.EE.4 Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	
Unit/Time	**CONTENT**	**SKILLS**	**ASSESSMENTS**	**CCMS**	**VOCABULARY**
Unit #2 *(4-5 weeks)* **October*	**Expressions and Equations**	*Students will be able to…* • Simplify linear expressions utilizing the distributive property and collecting like terms. (8.EE.7) • Create a multi-step linear equation to represent a real-life situation. (8.EE.7) • Solve equations with linear expressions on either or both sides including equations with one solution, infinitely many solutions, and no solutions. (8.EE.7) • Give examples of and identify equations as having one solution, infinitely many solutions, or no solutions. (8.EE.7)	Observation Participation Manipulatives Guided Practice Independent Practice Worksheets Projects Quizzes Tests	**Analyze and solve linear equations.** ▪ 8.EE.7 Solve linear equations in one variable. a) Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, *or* $a = b$ results (where a and b are different numbers). b) Solve linear equations	**Critical Terms:** Simplify Distributive property Like terms Solution Inverse operations **Supplemental Terms:** Expand Factor Variable Unknown

		Some students may be ready to… • Create and solve equation representations of more complex real-life situations. • Create and solve inequality representations of real-life situations. *(i.e. The school band sells shirts for* $\$10$ *each. It costs them* $\$3$ *per shirt to buy each shirt and* $\$2$ *per shirt to have the logo printed. There was also a* $\$1000$ *printer set-up fee. If they want to have a profit of at least* $\$4$ *per shirt sold, how many shirts do they need to sell?)* • Solve simple quadratic equations of the form $ax^2 - c = p$. • Solve simple radical equations of the form $a\sqrt{x+b} = p$.		with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	