Moon Area School District Curriculum Map

Course: Pre-Algebra
Grade Level: 7
Content Area: Math
Frequency: Full-Year Course

Big Ideas

1.

Essential Questions

2.

Primary Resource(s) & Technology:
enVision Textbook Series, IXL online software,
Microsoft Teams, Promethean Boards, Student Laptops/iPads

Pennsylvania and/or focus standards referenced at:
www.pdesas.org
www.education.pa.gov

Big Ideas/EQs	Focus Standard(s)	Assessed Competencies (Key content and skills)	Timeline
BIG IDEAS: The ways of representing numbers, relationships among numbers, and number systems impact the understanding of numbers. The meanings of operations and how they relate to one another affect the outcome. Computing fluently and making reasonable estimates supports mathematical arguments.	Eligible Content: 7.NS.A 7.NS.A.1a 7.NS.A.1b 7.NS.A.1c 7.NS.A.2a 7.NS.A.2b 7.NS.A.2c 7.NS.A.2d 7.NS.A.3 7.EE.B.3	<u>Number System:</u> - Model on a number line - Compare and order integers, fractions, and decimals - Interpret opposites and absolute value of an integer as its distance from zero - Relate direction and distance to the number line - Use models and rational numbers to represent and solve problems - Develop and use different models (number line, chip model) for representing addition, subtraction, multiplication, and division of rational numbers - Develop algorithms for adding, subtracting, multiplying, and dividing rational numbers - Interpret and write mathematical sentences to show relationships and solve problems - Use Order of Operations - Use integers to represent real world situations and explain the meaning of zero in that context	August - September

ESSENTIAL QUESTIONS: When is it important for you to use decimals in everyday life? Why is it important that we have different operations? Why do we have negative numbers? How do we know if your calculation results in a positive or negative integer?			
BIG IDEAS: Patterns, relations, and functions exhibit relationships that can be extended, described and generalized. Representing and analyzing mathematical situations and structures using algebraic symbols represents real world situations. Using mathematical models helps to represent and understand quantitative relationships. **ESSENTIAL QUESTIONS:**	7.RP.A 7.RP.A1 7.RP.A2.a 7.RP.A2.b 7.RP.A2.c 7.RP.A2.d 7.RP.A3	**Rates and Ratios:** - Convert between decimals, fractions, and percents - Use ratios, rates, fractions, decimals, and percents to write statements comparing two quantities - Distinguish between and use both part-to-part and part-to-whole ratios - Use percents to express ratios and proportions - Recognize that constant growth in a table, graph, or equation is related to proportional situations - Write an equation to represent the pattern in a table or graph of proportionally related variables - Identify the constant of proportionality in graphs, tables and equations - Scale a ratio, rate, percent, or fraction to make a comparison or find an equivalent representation - Use various strategies to solve for an unknown in a proportion, including scaling, rate tables, percent bars, unit rates, and equivalent ratios - Find discounts, markups, sales tax, and tips - Solving problems using the percent increase or decrease	SEPTEMBER - NOVEMBER

What is the best way to represent a measurable quantity using a ratio? Why do we have different units of measure? What is the best way to set up a proportion? What are the pros and cons of the methods of displaying proportional relations? What is the best way to represent the percent of increase/percent of decrease? How do we determine the price of items in a sale based on sales, discounts, and/or tax?			

BIG IDEAS:
 	
Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.
 	
Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.
	7.EE.A
	7.EE.A.1
	7.EE.A.2
	
	7.EE.B
	7.EE.B.3
	7.EE.B.4
	7.EE.B.4a
	7.EE.B.4b
	
	8.EE.B.5
	8.EE.B.6
	
	8.EE.C.7a
	8.EE.C.7b
		Expressions & Equations:
		- Apply the Distributive Property to simplify expressions
		- Simplifying expressions using combining like terms, Distributive Property, and Order of Operations.
		- Solve equations visually using manipulatives (coins and pouches)
		- Solve equations using inverse operations
		   o Solve one-step equations
		   o Solve multi-step equations
		   o Solve equations involving Distributive Property
		   o Solve equations with variables on both sides
		- Show that two expressions are equivalent
		- Write an equation to represent real-world problems
			NOVEMBER- JANUARY and MAY

Representing and analyzing mathematical situations and structures using algebraic symbols represents real world situations **ESSENTIAL QUESTIONS:** When can we utilize the distributive property in everyday life? What is the most appropriate method to evaluating expressions and inequalities? How do you determine which method to use to show equivalency among expressions and inequalities?		- Solve and graph one-step and two-step inequalities - Represent a real-world situation with an inequality statement - Find solutions to real-world inequality situations	
BIG IDEAS: Data can be used to formulate questions, collect, organize, and display information. Appropriate statistical methods can be used to analyze data. Inferences and predictions can be used to evaluate data. Basic concepts of probability can be understood and applied to predict outcomes.	7.SP.A.1 7.SP.A.2 7.SP.A.2c 7.SP.B.3 7.SP.B.4 7.SP.C.5 7.SP.C.6 7.SP.C.7 7.SP.C.7a 7.SP.C.7b 7.SP.C.8a 7.SP.C.8c 7.EE.B.3	**Data Analysis and Statistics:** -Choose appropriate measures of center (mean, median or mode) - Choose appropriate measures of spread (range, interquartile range, mean absolute deviation) - Interpret stem-and-leaf plots - Create and interpret box-and-whisker plots - Use data to draw inferences about random sampling - Recognize that the probability of an event is a number between 0 and 1 that expresses the likelihood of an event occurring - Calculate theoretical and experimental probability - Distinguish between outcomes that are equally likely and not equally likely - Perform trials of an experiment to determine probability - Utilize the counting principle - Distinguish between independent and dependent events	FEBRUARY - MARCH

ESSENTIAL QUESTIONS: How can we use variations in real-world problems? Explain the relationship between a population and a sample. Why is it important to have a good sample size in gathering data?		- Use area models to represent probability - Describe overall patterns, shape and deviations in a set of data	

BIG IDEAS: Geometric relationships and characteristics of two- and three-dimensional shapes can be described, analyzed, and classified based on spatial reasoning and/or visualization. Coordinate geometry and other representational systems specify locations and describe spatial relationships. Visualizing, spatial reasoning, and geometric modeling solve problems. **ESSENTIAL QUESTIONS:** Why is it important to understand a scale drawing versus the actual size?	7G.A.1
	7G.A.2
	7G.A.3
	
	7G.B.3
	7G.B.4
	7G.B.5
	7G.B.6
	7G.B.7
	
	7.EE.B.3
	7.EE.B.4a
	
	7.NS.A.3
		Geometry
		- Identify and plot points in all 4 quadrants of the coordinate plane
		- Identify similar figures by comparing corresponding sides and angles
		- Use scale factors and ratios to describe relationships among the side lengths, perimeters, and areas of similar figures.
		- Compare similar figures with non-similar figures
		- Distinguish algebraic rules that produce similar figures from those that produce non-similar figures
		- Recognize when a rule shrinks or enlarges a figure
		- Find the unknown sides in similar figures
		- Use similarity to solve real-world problems
		- Identify and use types of angles: complementary, supplementary, vertical, corresponding, straight
		- Identify and use types of polygons
		- Find missing angles in a polygon
		- Interior and exterior angles
		- Triangle Inequality Theorem
		- Perimeter and Area of triangles, quadrilaterals, and composite figures
		- Circles
		  o Radius
		  o Diameter
		  o Pi
		  o Circumference
		  o Area
		- Describe prisms using vertices, faces and edges
			APRIL

Why are similar figures proportional? What is the best method for determining the relationship among two angles? How do we use shapes to construct real world figures? When would you need to know the measurement of a circle or the area of it? How do we use cross-sections to slice and dice three dimensional figures? Explain how volume differs from surface area.		- Visualize three-dimensional shapes and the effects of slicing (cross sections) - Find surface area and volume of prisms - Solve real-world problems involving surface area and volumes of solid figures - Reflect figures and identify lines of symmetry - Translate and rotate figures on the coordinate plane	