

SUBJECT: Math		GRADE: 8	
Unit Title: Chapter 1 Problem Solving		Time Frame: 12 Days	
UNIT OVERVIEW			
Section 1.1 - This section includes several problems and activities that use many of the big ideas of algebra. Each problem or activity requires your study team to work together and use various problem-solving strategies. Section 1.2 - In this section, you will use what you know about proportional relationships to solve proportional problems.			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
Collaboration and Teamwork: Chapter 1 Graded Review Activity (S1B) Resilience and Grit: Graphing Stories Matching Activity (D4A)		CC.2.2.8.B.2 - Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.C.1 - Define, evaluate, and compare functions. CC.2.2.8.C.2 - Use concepts of functions to model relationships between quantities. CC.2.4.8.B.1 - Analyze and/or interpret bivariate data displayed in multiple representations.	
COMPETENCIES		LEARNING TARGETS	
Graphing: I can create and interpret graphs as visual representations of the relationship between quantities.		Plotting Points: I can plot points on a graph. (K1MAB7I1) Construct Complete Graphs: I can construct graphs with appropriately scaled and labeled axes. (K1MAB7I2)	
Ratios and Proportional Relationships: I can recognize, represent, and utilize ratios and proportional relationships to solve problems.		Solving Proportions: I can solve problems with proportional relationships. (K1MAB3I1) Identifying Proportional Relationships: I can use graphs and tables to identify and compare proportional relationships. (K1MAB3I2)	
Measurement, Data, and Statistics: I can collect, represent, analyze, and interpret data.		Interpret Graphs: I can interpret graphs. (K1MAB10I1)	

	Display and Analyze Data: I can display and analyze data in different graphical displays. (K1MAB10I2)
Patterns, Functions, Mult Reps: I can identify, create, and evaluate functions using multiple representations.	Making Predictions Using Multiple Representations: I can make and justify predictions using tables, graphs, and rules. (K1MAB6I7)
Numbers and Operations – Fractions: I can find common factors and multiples to represent, compare, and calculate quantities using fractions.	Add and Subtract Fractions: I can add and subtract fractions (with unlike denominators). (K1MAB2I2) Multiply and Divide Fractions: I can multiply and divide fractions. (K1MAB2I3)
Operations and Expressions: I generate equivalent expressions using operations and mathematical properties.	Operations with Integers: I can perform operations with integers. (K1MAB4I1)

SUBJECT: Math		GRADE: 8
Unit Title: Chapter 2 Simplifying with Variables		Time Frame: 21 Days
UNIT OVERVIEW		
Section 2.1 • This section introduces algebra tiles. Using algebra tiles will help develop the symbolic manipulation skills of combining like terms and solving linear equations. A special focus will be placed on the meaning of “minus” and how to make “zero.” • How do I use the distributive property to simplify algebraic expressions with like terms?		
LRG SKILLS AND DISPOSITIONS		PA STANDARDS
Collaboration and Teamwork: Chapter 2 Graded Review Activity (S1B) Critical Thinking and Problem Solving: Algebra Tile Perimeter Expression Activity (S4B)		CC.2.2.7.B.1 - Apply properties of operations to generate equivalent expressions. CC.2.2.8.B.1 - Apply concepts of radicals and integer exponents to generate equivalent expressions.

	CC.2.2.8.B.3 - Analyze and solve linear equations and pairs of simultaneous linear equations
COMPETENCIES	LEARNING TARGETS
Operations and Expressions: I can generate equivalent expressions using operations and mathematical properties.	Defining Variables: I can define the meaning of the variable(s) used in an equation or inequality. (K1MAB4I3) Combining Like Terms: I can combine like terms to simplify an expression. (K1MAB4I4) Evaluating Expressions: I can evaluate an expression using order of operations when given the value of the variable. (K1MAB4I7) Mathematical Properties: I can identify and use mathematical properties. (K1MAB4I2)
Equations and Inequalities: I can create and solve equations and inequalities that represent mathematical situations.	Solve and Check Equations: I can solve and check an established equation. (K1MAB5I3) Solve and Check Equations (variables on both sides): I can solve equations with variables on two sides and check equations. (K1MAB5I4)

SUBJECT: Math		GRADE: 8	
Unit Title: Chapter 3 Graphs and Equations		Time Frame: 20 Days	
UNIT OVERVIEW			
Section 3.1 You will learn new graphing skills and strategies that will help you throughout the rest of this course. You will also learn how to create tables, write rules, and draw graphs to represent situations and patterns.			
Section 3.2 You will learn how to solve linear equations without using algebra tiles and will learn the significance of solutions.			

LRG SKILLS AND DISPOSITIONS	PA STANDARDS
Collaboration and Teamwork: Chapter 3 Graded Review Activity (S1B) Critical Thinking and Problem Solving: Max Activity/Extensions Set (S4B) Resilience and Grit: Silent Board Game (D4A)	CC.2.4.7.B.2 - Draw informal comparative inferences about two populations CC.2.2.8.B.1 - Apply concepts of radicals and integer exponents to generate equivalent expressions CC.2.2.8.B.2 - Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.B.3 - Analyze and solve linear equations and pairs of simultaneous linear equations. CC.2.4.8.B.2 - Understand that patterns of association can be seen in bivariate data utilizing frequencies.
COMPETENCIES	LEARNING TARGETS
Patterns, Functions, Multiple Representations: I can identify, create, and evaluate functions using multiple representations.	Making Predictions Using Multiple Representations: I can make and justify predictions using tables, graphs, and rules. (K1MAB6I7) Finding and Completing Patterns: I can find the pattern in a table of values and determine any missing values. (K1MAB6I1) Writing Slope-Intercept Rule from Pattern: I can find the pattern in a table of values and write a rule in slope-intercept form to represent the pattern. (K1MAB6I2) Identifying Growth (pattern, table, graph, or rule): I can identify growth from a pattern, table, graph, or rule. (K1MAB6I3) Create a Table of Values: I can model a situation with a table of values. (K1MAB6I4)
Graphing: I can create and interpret graphs as visual representations of the relationship between quantities.	Construct Complete Graphs: I can construct graphs with appropriately scaled and labeled axes. (K1MAB7I2) Identify and Correct Graphing Errors: I can identify and correct common graphing errors. (K1MAB7I3)
Sequences and Series: I can identify, describe, and represent various types of sequences and series.	Describing Patterns Algebraically: I can write a rule for the nth term of an arithmetic sequence. (K1MAB14I1)

Equations and Inequalities: I can create and solve equations and inequalities that represent mathematical situations.	Linear Rules: I can derive a rule for a linear situation. (K1MAB5I1) Write and Solve Equations: I can solve word problems with equations. (K1MAB5I2) Solve and Check Equations: I can solve and check an established equation. (K1MAB5I3) Solve and Check Equations (variables on both sides): I can solve equations with variables on two sides and check equations. (K1MAB5I4) Solve and Check Equations (distributive property): I can solve equations by applying the distributive property. (K1MAB5I5) Solve and Check Equations (fractional coefficients): I can solve equations with fractional coefficients. (K1MAB5I6) Determining Solutions: I can determine the number of solutions an equation has. (K1MAB5I7)
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SUBJECT: Math		GRADE: 8	
Unit Title: Chapter 4 Multiple Representations		Time Frame: 14 Days	
UNIT OVERVIEW			
Section 4.1 You will shift between different representations of linear patterns, using the web diagram shown at left. You will find ways to change from one representation to each of the other three representations			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
Collaboration and Teamwork: Chapter 4 Graded Review Activity (S1B) Critical Thinking and Problem Solving: Multiple Representations		CC.2.4.7.B.2 - Draw informal comparative inferences about two populations. CC.2.2.8.B.1 - Apply concepts of radicals and integer exponents to generate equivalent expressions.	

Flowchart (S4B)	CC.2.2.8.B.2 - Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.B.3 - Analyze and solve linear equations and pairs of simultaneous linear equations. CC.2.4.8.B.2 - Understand that patterns of association can be seen in bivariate data utilizing frequencies.
COMPETENCIES	LEARNING TARGETS
Graphing: I can create and interpret graphs as visual representations of the relationship between quantities.	Plotting Points: I can plot points on a graph. (K1MAB7I1) Construct Complete Graphs: I can construct graphs with appropriately scaled and labeled axes. (K1MAB7I2) Identify and Correct Graphing Errors: I can identify and correct common graphing errors. (K1MAB7I3) Solving Systems of Linear Equations (graphing): I can graph and solve a system of linear equations. (K1MAB7I4)
Patterns, Functions, Multiple Representations: I can identify, create, and evaluate functions using multiple representations	Making Predictions Using Multiple Representations: I can make and justify predictions using tables, graphs, and rules. (K1MAB6I7) Create a Table of Values: I can model a situation with a table of values. (K1MAB6I4) Slope from Graph: I can find the slope of a line given its graph. (K1MAB6I9)
Equations and Inequalities: I can create and solve equations and inequalities that represent mathematical situations.	Define Slope-Intercept: I understand each component of $y=mx+b$ and the representation of each. (K1MAB5I9) Linear Rules: I can derive a rule for a linear situation. (K1MAB5I1)

SUBJECT: Math		GRADE: 8	
Unit Title: Chapter 5 Systems of Equations		Time Frame: 12 Days	
UNIT OVERVIEW			
Section 5.1 - You will study how to solve multi-variable equations for one of the variables. - You will also learn how to solve equations that contain fractions. Section 5.2 - You will examine word problems in which two amounts are compared. - You will use your knowledge of graphs and rules to write equations for word problems. - Using the Equation Mat, you will solve a pair of linear equations to determine where two lines cross.			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
Collaboration and Teamwork: Chapter 5 Graded Review Activity (S1B) Critical Thinking and Problem Solving: Systems Word Problems and Interpretation (S4B) Resilience and Grit: Solving Systems of Equations Using All Methods (D4A)		CC.2.4.7.B.2 - Draw informal comparative inferences about two populations. CC.2.2.8.B.1 - Apply concepts of radicals and integer exponents to generate equivalent expressions. CC.2.2.8.B.2 - Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.B.3 - Analyze and solve linear equations and pairs of simultaneous linear equations. CC.2.4.8.B.2 - Understand that patterns of association can be seen in bivariate data utilizing frequencies.	
COMPETENCIES		LEARNING TARGETS	
Equations and Inequalities: I can create and solve equations and inequalities that represent mathematical situations.		Linear Rules: I can derive a rule for a linear situation. (K1MAB5I1) Write and Solve Equations: I can solve word problems with equations. (K1MAB5I2) Solve and Check Equations: I can solve and check an established equation. (K1MAB5I3)	

Solve and Check Equations (variables on both sides): I can solve equations with 2 variables and check. (K1MAB5I4)

Solve and Check Equations (distributive property): I can solve equations by applying the distributive property. (K1MAB5I5)

Solve and Check Equations (fractional coefficients): I can solve and check equations with fractional coefficients. (K1MAB5I6)

Determining Solutions: I can determine the number of solutions an equation has. (K1MAB5I7)

Solving for Given Variable: I can solve a literal equation for a given variable. (K1MAB5I8)

Define Slope-Intercept: I understand each component of $y=mx+b$ and the representation of each. (K1MAB5I9)

Slope Intercept and Line of Best Fit: I can write the equation that represents the trend line of a graph in $y=mx+b$ form. (K1MAB5I10)

Determine Slope and Y-Intercept (table): I can determine slope and y-intercept from a table. (K1MAB5I12)

Determine Slope and Y-Intercept (graph): I can determine slope and y-intercept from a graph. (K1MAB5I13)

Determine Slope and Y-Intercept (situation): I can determine slope and y-intercept from a linear situation. (K1MAB5I14)

SUBJECT: Math		GRADE: 8	
Unit Title: Chapter 6 Transformations and Similarity		Time Frame: 15 Days	
UNIT OVERVIEW			
Section 6.1 - You will use an eTool to move a shape on a coordinate graph using slides, flips, and turns, and will use integers to describe those moves. Section 6.2 - This section will introduce similarity and congruence for polygons.			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
Collaboration and Teamwork: Chapter 6 Graded Review Activity (S1B) Critical Thinking and Problem Solving: Four Movement Activity Set (S4B)		CC.2.3.8.A.2 - Understand and apply congruence, similarity, and geometric transformations using various tools.	
COMPETENCIES		LEARNING TARGETS	
Graphing: I can create and interpret graphs as visual representations of the relationship between quantities.		Plotting Points: I can plot points on a graph. (K1MAB7I1) Construct Complete Graphs: I can construct graphs with appropriately scaled and labeled axes. (K1MAB7I2)	
Geometry: I can describe, analyze, and apply geometric relationships to solve problems.		Rigid Transformations (translating): I can transform shapes by translating them on a coordinate graph. (K1MAB9I6) Rigid Transformations (reflecting): I can transform shapes by reflecting them on a coordinate graph. (K1MAB9I7) Rigid Transformations (rotation): I can transform shapes by rotating them on a coordinate graph. (K1MAB9I8) Transformations (dilations): I can transform shapes through dilation on a coordinate plane. (K1MAB9I9)	

	Transformations (algebraic expressions): I can describe movement on a graph using coordinates and expressions. (K1MAB9I10)
Ratios and Proportional Relationships: I can recognize, represent, and utilize ratios and proportional relationships to solve problems.	Scale Factor: I can compare shapes and use similarity to find missing side lengths of polygons, especially triangles. (K1MAB3I3)

SUBJECT: Math		GRADE: 8	
Unit Title: Chapter 7 Slope and Association		Time Frame: 16 Days	
UNIT OVERVIEW			
Section 7.1 In this section, you will first create and interpret circle graphs. You will also learn how to make graphs that compare two sets of data. Then, you will use scatterplots and linear graphs to make observations and predictions about the data based on correlations.			
Section 7.2 Here, you will compare ratios and rates using different representations, including numbers, tables, and graphs. You will find out how to measure the steepness of a line on a graph.			
Section 7.3 In this section, you will find equations of lines that fit data and will use them to make predictions based on trends.			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
Collaboration and Teamwork: Chapter 7 Graded Review Activity (S1B) Critical Thinking and Problem Solving: Five Guys Line of Best Fit Activity (S4B)		CC.2.2.8.B.1 - Apply concepts of radicals and integer exponents to generate equivalent expressions. CC.2.2.8.B.2 - Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.B.3 - Analyze and solve linear equations and pairs of simultaneous linear equations. CC.2.2.8.C.1 - Define, evaluate, and compare functions. CC.2.2.8.C.2 - Use concepts of functions to model relationships between quantities. CC.2.4.8.B.1 - Analyze and/or interpret bivariate data displayed in multiple representations.	

COMPETENCIES	LEARNING TARGETS
Graphing: I can create and interpret graphs as visual representations of the relationship between quantities.	Plotting Points: I can plot points on a graph. (K1MAB7I1) Construct Complete Graphs: I can construct graphs with appropriately scaled and labeled axes. (K1MAB7I2) Solving Systems of Linear Equations (graphing): I can graph and solve a system of linear equations. (K1MAB7I4)
Patterns, Functions, Mult. Rep: I can identify, create, and evaluate functions using multiple representations.	Writing Slope-Intercept Rule from a Pattern: I can find the pattern in a table of values and write a rule in slope-intercept form to represent the pattern. (K1MAB6I2) Identifying Growth (pattern, table, graph rule): I can identify growth from a pattern, table, graph, or rule. (K1MAB6I3) Create Table of Values (situation): I can model a situation with a table of values. (K1MAB6I4) Graphing Slope-Intercept (no table): I can graph a slope-intercept equation without a table. (K1MAB6I5) Connecting Multiple Representations: I can use connections between graphs, rules, tables, and patterns to solve problems. (K1MAB6I6) Making Predictions Using Multiple Representations: I can make and justify predictions using tables, graphs, and rules. (K1MAB6I7) Slope from Equation: I can find the slope of a line given its equations. (K1MAB6I8) Slope from a Graph: I can find the slope of a line given its graph. (K1MAB6I9)

SUBJECT: Math		GRADE: 8	
Unit Title: Chapter 8 Exponents and Functions		Time Frame: 16 Days	
UNIT OVERVIEW			
Section 8.1 - You will learn about compound interest and use patterns of growth to write expressions. You will analyze the patterns in tables, graphs, and expressions to compare linear and exponential growth. Section 8.2 - You will learn new ways to rewrite numbers and expressions involving exponents. You will also learn how to perform operations with these numbers and expressions.			
LRG SKILLS AND DISPOSITIONS			
Collaboration and Teamwork: Chapter 8 Graded Review Activity (S1B) Critical Thinking and Problem Solving: Two-Way Tables Activity (S4B) Resilience and Grit: Exponent Get More Math Work (D4A)		CC.2.2.8.B.2 - Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.B.3 - Analyze and solve linear equations and pairs of simultaneous linear equations. CC.2.2.8.C.1 - Define, evaluate, and compare functions. CC.2.2.8.C.2 - Use concepts of functions to model relationships between quantities. CC.2.4.8.B.1 - Analyze and/or interpret bivariate data displayed in multiple representations. CC.2.4.8.B.2 - Understand that patterns of association can be seen in bivariate data utilizing frequencies.	
COMPETENCIES		LEARNING TARGETS	
Operations and Expressions: I can generate equivalent expressions using operations and mathematical properties.		Exponent Rules: I can use exponent rules to rewrite expressions. (K1MAB4I5) Operations with Scientific Notation: I can multiply and divide numbers in Scientific Notation. (K1MAB4I6)	

	Scientific Notation: I can use patterns of Scientific Notation to rewrite expressions. (K1MAB4I8)
Measurement, Data, and Statistics: I can collect, represent, analyze, and interpret data.	Display and Analyze Data: I can display and analyze data in different graphical representations. (K1MAB10I2) Identify Associations: I can identify associations between sets of bivariate data. (K1MAB10I4)

SUBJECT: Math		GRADE: 8	
Unit Title: Chapter 9 Angles and the Pythagorean Theorem		Time Frame: 19 Days	
UNIT OVERVIEW			
Section 9.1 You will look at angles formed when a third line intersects a set of parallel lines, identifying the relationships between certain pairs of angles. You will also learn about the special relationships between the angles inside and outside a triangle and how to tell if two triangles are similar without knowing anything about their side lengths.			
Section 9.2 You will learn how to determine if any three lengths will form a triangle, and, if they do, whether that triangle will be acute, obtuse, or right. You will find missing sides of right triangles using the Pythagorean Theorem. You will also learn about the square root operation and irrational numbers.			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
Collaboration and Teamwork: Chapter 9 Graded Review Activity (S1B) Critical Thinking and Problem Solving: Pythagorean Theorem Word Problems (S4B)		CC.2.2.8.B.1 - Apply concepts of radicals and integer exponents to generate equivalent expressions. CC.2.2.8.B.2 - Understand the connections between proportional relationships, lines, and linear equations. CC.2.2.8.C.1 - Define, evaluate, and compare functions. CC.2.4.8.B.1 - Analyze and/or interpret bivariate data displayed in multiple representations.	

COMPETENCIES	LEARNING TARGETS
Geometry: I can describe, analyze, and apply geometric relationships to solve problems.	Pythagorean Theorem: I can apply Pythagorean Theorem to determine if a shape is a right triangle and find missing side lengths. (K1MAB9I2)
Numbers and Operations - Base Ten: I can estimate and calculate using decimals.	Square Root: I can find the square root of a number. (K1MAB1I1) Cube Root: I can find the cube root of a number. (K1MAB1I2) Estimating Rational and Irrational Numbers: I can estimate the value of both rational and irrational numbers. (K1MAB1I3) Identifying Irrational Numbers: I can identify irrational numbers. (K1MAB1I4)

SUBJECT: Math		GRADE: 8	
Unit Title: Chapter 10 Surface Area and Volume		Time Frame: 17 Days	
UNIT OVERVIEW			
Section 10.1 You will begin by learning how to find the cube root of a number. Then you will learn how to find the surface areas of cylinders and pyramids and the volumes of cylinders, pyramids, cones, and spheres.			
LRG SKILLS AND DISPOSITIONS		PA STANDARDS	
Collaboration and Teamwork: Chapter 10 Graded Review Activity (S1B) Critical Thinking and Problem Solving: Volume Word Problems (S4B)		CC.2.1.8.E.1 CC.2.1.8.E.4 - Estimate irrational numbers by comparing them to rational numbers. CC.2.2.8.B.1 - Apply concepts of radicals and integer exponents to generate equivalent expressions. CC.2.2.8.B.3 - Analyze and solve linear equations and pairs of simultaneous linear equations.	

	CC.2.3.8.A.2 - Understand and apply congruence, similarity, and geometric transformations using various tools. CC.2.3.8.A.3 - Understand and apply the Pythagorean Theorem to solve problems.
COMPETENCIES	LEARNING TARGETS
Geometry: I can describe, analyze, and apply geometric relationships to solve problems.	Surface Area of Cylinders: I can determine the surface area of cylinders. (K1MAB9I3) Volume of Cylinders: I can determine the volume of cylinders. (K1MAB9I4) Surface Area of Pyramids: I can determine the surface area of pyramids. (K1MAB9I11) Volume of Pyramids: I can determine the volume of pyramids. (K1MAB9I12) Volume of Cones: I can determine the volume of cones. (K1MAB9I13) Volume of Spheres: I can determine the volume of spheres. (K1MAB9I14) Perimeter of Complex Figures: I can determine the perimeter of complex figures. (K1MAB9I15) Find Missing Length: I can find the measurement of a missing length given the surface area or volume of a figure Area of Complex Figures: I can determine the area of complex figures. (K1MAB9I5)