IAA Curriculum - Pre-Algebra

Content Area	Mathematics	**Grade**	8/9
Course Name	Pre-Algebra		

This curriculum is to be used for 8th and 9th grade classes. The 8th grade classes follow a period schedule and the 9th grade classes follow a block schedule that meets every other day. The number of days is based on the 8th grade meeting schedule. The 9th grade classes will cover 2 days of material during each of their class periods.

Unit Number	Unit Topic	Instruction	Review/Reteach	Assessing	Buffer	Total
1	Language of Algebra (1-2, 1-3, 1-4, 1-7)	4		1		5
2	Operations with Integers (2-1 thru 2-6, 1-6)	8	1	1		10
3	Operations with Rational Numbers	8	1	1	1	11
4	Powers and Roots	8	1	1		10
5	Ratios, Proportions, Similar Figures (skip 5-10)	8	1	1	1	11
6	Percents	7	2	1		10
7	Algebraic Expressions	5		1		6
8a	Equations (8-1 thru 8-5)	10	1	1	2	14
8b	Inequalities (8-6 thru 8-8)	5	2	1	1	9
9a	Linear Functions and Scatter Plots (9-1 thru 9-5, ++)	10	2	1	2	15
9b	Systems of Equations (9-6, 9-7)	4	2	1	2	9
10	Geometry - Volume of Circular and Composite Figures(12-1 thru 12-3, 12-5 thru 12-7)	5	1	1		7
11	Geometry - Congruence, Similarity, Transformations, Pythagorean Theorem (11-4 thru 11-8 + Pythag. Th.)	6	1	1		8
12	Statistics, Probability (Ch. 10)	8	1	1		10
	Extra Assessment Days/Days After Testing					45
Total Time		96	16	14	9	180

Board Approved 08/2022

Unit	1. Language of Algebra					
Concept / Big Idea	Numerical expressions can be modeled symbolically.					
Essential Question	• How can you use numbers and symbols to represent mathematical ideas?					
Competencies	• How can I use mathematical terms to write, identify and/or describe algebraic expressions? • How can I evaluate real world problems using expressions derived from formulas? • How can I write and evaluate expressions using exponents? • Using the properties of operations, how can I write and/or identify equivalent expressions?					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(5 days)	Write algebraic expressions from verbal descriptions.	- Do Now / Warm-Up - Lesson video - Direct instruction - iXL Activities - Practice activities: • Absolute value - Millionaire	MA.CC.2.2.6.B.1	M06.B-E.1.1	M06.B-E.1.1.2	Expression Equation Exponent Base Power Term Coefficient Quantity Variable Substitution Like Terms Formula
	Identify parts of an expression using mathematical terms.		MA.CC.2.2.6.B.1	M06.B-E.1.1	M06.B-E.1.1.3	
	Evaluate expressions at specific values of their variables, including expressions that arise from formulas used in real-world problems.		MA.CC.2.2.6.B.1	M06.B-E.1.1	M06.B-E.1.1.4	
	Apply the properties of operations to generate equivalent expressions.		MA.CC.2.2.6.B.1	M06.B-E.1.1	M06.B-E.1.1.5	
Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Chapter 1, Lessons (1-2, 1-3, 1-4, 1-7) • McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters • McGraw Hill / Glencoe Math Interactive Study Guide • MathGames.com and IXL.com - practice activities • Virtual math manipulatives here • Vocabulary flashcards • Math Notes					

Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes
Summative Assessments	• Chapter Quiz
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available

Unit	2. Operations with Integers					
Concept / Big Idea	Positive and negative numbers are used together to describe quantities having opposite values and locations on the number line and coordinate plane.					
Essential Question	• What happens when you add, subtract, multiply, and divide integers? • How do I solve real world and mathematical problems involving rational numbers? • How do the rules and properties of addition, subtraction, multiplication and division help us compute with integers?					
Competencies	• Add, subtract, multiply and divide positive and negative integers to compute and/or solve word problems.					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(10 days)	Interpret the absolute value of a rational number as its distance from 0 on the number line and as a magnitude for a positive or negative quantity in a real-world situation.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities: • Add integers - Orbit Integers • Add Integers - Speed Racing • Add / sub. integers - X-Ray Math • Compare integers - Math Boxing • Multiply Integers - Integer Warp • Integer operations - Jeopardy • Integer Operations - Quia • Integer Operations - timed tests • Integer Operations - FlashCards or Playing Cards (manipulative)	MA.CC.2.1.6.E.4	M06.A-N.3.2	M06.A-N.3.2.2	Integer Absolute value Terminating decimal Repeating decimal Natural numbers Whole numbers Counting number Positive integer Negative integer Opposite Additive inverse Commutative Property
	Apply properties of operations to add and subtract integers, including real-world contexts.		MA.CC.2.1.7.E.1	M07.A-N.1.1	M07.A-N.1.1.1	
	Apply properties of operations to multiply and divide integers, including real-world contexts.		MA.CC.2.1.7.E.1	M07.A-N.1.1	M07.A-N.1.1.3	
	Solve real-world mathematical problems by plotting points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.		MA.CC.2.1.6.E.4	M06.A-N.3.2	M06.A-N.3.2.3	
Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Chapter 2, Lessons (2-1 thru 2-6, 1-6) • McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters • McGraw Hill / Glencoe Math Interactive Study Guide • MathGames.com and IXL.com - practice activities					

	• Virtual math manipulatives here • Vocabulary flashcards - Quizlet • Math Notes - Math Notes
Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes
Summative Assessments	• Chapter Test
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available

Unit	3. Operations with Rational Numbers					
Concept / Big Idea	Solve real world and mathematical problems involving the four operations with rational numbers.					
Essential Understandings	• What types of numbers exist on a number line? • How do I solve real world and mathematical problems involving rational numbers? • How do the rules and properties of addition, subtraction, multiplication and division help us compute rational numbers?					
Competencies	• Determine whether a number is rational or irrational. • Show that a rational numbers' decimal expansion terminates or repeats. • Convert a terminating decimal into a rational number. • Understand the relationship between fractions, decimals and integers. • Multiply and divide decimals, fractions, and integers to compute and/or solve word problems. • Convert a fraction to decimal to determine if it is terminating or repeating.					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(11 days)	Determine whether a number is rational or irrational. For rational numbers, show that the decimal expansion terminates or repeats (limit repeating decimals to thousandths).	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities: • Rational numbers: Live Worksheets • Classify numbers: Khan Academy • Ordering real numbers: Interactive Worksheet • Rational numbers: Live Worksheets • Classify numbers: Khan Academy • Ordering real numbers: Interactive Worksheet	MA.CC.2.1.8.E.1	M08.A-N.1.1	M08.A-N.1.1.1	natural number whole number integer rational number real number irrational number terminating decimal repeating decimal bar notation
	Convert a terminating or repeating decimal into a rational number (limit repeating decimals to thousandths).		MA.CC.2.1.8.E.1	M08.A-N.1.1	M08.A-N.1.1.2	
	Apply properties of operations to multiply and divide rational numbers, including real-world contexts (incl. Order of Operations).		MA.CC.2.1.7.E.1	M07.A-N.1.1	M07.A-N.1.1.3	
	Demonstrate that the decimal form of a rational number terminates or eventually repeats.		MA.CC.2.1.7.E.1	M07.A-N.1.1	M07.A-N.1.1.3	
Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Chapter 3					

	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters • McGraw Hill / Glencoe Math Interactive Study Guide • MathGames.com and IXL.com - practice activities • Virtual math manipulatives here • Vocabulary flashcards - Quizlet • Math Notes - Math Notes
Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes
Summative Assessments	• Chapter Test
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available

Unit	4. Powers and Roots (and Scientific Notation)
Concept / Big Idea	Demonstrate an understanding of expressions and equations with radicals and integer exponents.
Essential Understandings	● Understand the Purpose of Scientific Notation ● Recognize Integer Exponent Relationships ● Represent Integer Exponent Properties
Competencies	● Apply properties of integer exponents to generate answers without a calculator. ● Use square and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$ (p is a positive rational number). ● Estimate very large or very small quantities by using numbers expressed in scientific notation. ● Perform operations with numbers expressed in scientific notation.

Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(10 days)	Apply one or more properties of integer exponents to generate equivalent numerical expressions without a calculator (with answers expressed in exponential form with positive exponents), properties provided.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities: ● Exponents and Roots ○ Negative Exp.s - lesson ○ Exp.s: SoftSchools Quiz ○ Multiply exponents: Quia ○ Laws of Exp - Pirate Game ○ Laws of Exp - Otter Rush ○ Math Interactives: Laws of Exponents - Pirate Dig ○ Exponents - Jeopardy ● Scientific Notation ○ AAAMath - lesson ○ CA Test Prep - CA Test Prep ○ Janus Astro - Astronomy Club	MA.CC.2.2.8.B.1	M08.B-E.1.1	M08.B-E.1.1.1	power base exponent radical sign square / square root cube / cube root monomial term scientific notation Laws of Exponents
	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 perfect squares (up to and including 122) and cube roots of perfect cubes (up to and including 53) without a calculator.		MA.CC.2.2.8.B.1	M08.B-E.1.1	M08.B-E.1.1.2	
	Estimate very large or very small quantities by using numbers expressed in the form of a single digit times an integer power of 10, and express how many times larger or smaller one number is than another.		MA.CC.2.2.8.B.1	M08.B-E.1.1	M08.B-E.1.1.3	

Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program, Chapter 4
	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters
	• McGraw Hill / Glencoe Math Interactive Study Guide
	• MathGames.com and IXL.com - practice activities
	• Virtual math manipulatives here
	• Vocabulary flashcards - Quizlet
	• Math Notes - Math Notes
	• Helpful videos:
	  ○ Math Antics: Intro to Exponents - video
	  ○ Math Antics: Zero Power - video
	  ○ Math Antics: Laws of Exponents - video
	  ○ Chemistry Text Online: Scientific Notation - video
	  ○ Math Antics: Scientific Notation - video
	  ○ Chemistry Text Online: Multiply & Divide Scientific Notation - video
	  ○ Chemistry Text Online: Add & Subtract Scientific Notation - video

Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes
Summative Assessments	• Chapter Test
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available

Unit	5. Ratios, Proportions, and Similar Figures					
Concept / Big Idea	Understand the connections between proportional relationships, similar figures, lines, and linear equations.					
Essential Question	• How can you identify and represent proportional relationships? • How are slope and unit rate related? • Represent Proportional Relationships					
Competencies	• Graph proportional relationships, interpreting the unit rate as the slope of the graph. • Write the equation for a given line in slope-intercept form.					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(11 days)	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities: • Plot points on coord plane - Stock the Shelves • Find intercepts - Quia • Find intercepts - MathExpression	MA.CC.2.1.7.D.1	M07.A-R.1.1	M07.A-R.1.1.1 M07.A-R.1.1.2 M07.A-R.1.1.3 M07.A-R.1.1.4 M07.A-R.1.1.5	Ratio Rate Unit rate Unit price Proportional Constant of Proportionality Rate of change Linear Direct variation Complex fraction Cross products Coordinate plane Ordered pair X-axis Y-axis Quadrant Slope Origin constant of variation linear relationship slope / rise / run point-slope form x-intercept
	Determine whether two quantities are proportionally related (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).		MA.CC.2.2.8.B.2	M08.B-E.2.1	M08.B-E.2.1.1 M08.B-E.2.1.2	
	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.					
	Represent proportional relationships by equations.					
	Explain what a point (x, y) on the graph of a proportional relationship					

	means in terms of the situation. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. Use similar right triangles to show and explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane.					y-intercept

Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program, Chapter 5 (skip Lesson 10)
	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters
	• McGraw Hill / Glencoe Math Interactive Study Guide
	• MathGames.com and IXL.com - practice activities
	• Virtual math manipulatives here
	• Vocabulary flashcards - Quizlet
	• Math Notes (Quizlet flashcards in .pdf format) - Math Notes
	• Helpful videos:
	  ○ Math Antics: Ratios and Proportions - video
	  ○ Math Shorts: Proportional Relationships - video
	  ○ Complex Fractions and Unit Rates - video

Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes
Summative Assessments	• Chapter Test
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available

Unit	6. Percents					
Concept / Big Idea	Percents are used to represent a portion of a whole quantity.					
Essential Question	• How can you use proportional relationships to solve real-world percent problems?					
Competencies	• How can I use ratios to find percent or convert measurement units?					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(10 days)	Find a percent of a quantity as a rate per 100. Solve problems involving finding the whole, given a part and the percent.	• Do Nows / Warmups • Direct Instruction • Practice Exercises • Practice Activities • iXL Practice Activities	MA.CC.2.1.6.D.1	M06.A-R.1.1	M06.A-R.1.1.5	Percent Proportion, Percent Equation, Percent of change, percent of increase, percent of decrease, percent error, discount, markup, interest,
Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program, Chapter 6 • McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters • McGraw Hill / Glencoe Math Interactive Study Guide • MathGames.com and IXL.com - practice activities • Virtual math manipulatives here					
Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes					
Summative Assessments	• Chapter Test					
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator • Simplified directions					

	• Translation tools available

Unit	7. Algebraic Expressions					
Concept / Big Idea	Use properties of operations to generate equivalent expressions.					
Essential Understandings	• How can relationships be modeled symbolically?					
Competencies	• Simplify and expand linear expressions. • Use the distributive property, combining like terms, and factoring to generate equivalent expressions.					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(6 days)	Apply properties of operations to add, subtract, factor, and expand linear expressions with rational coefficients.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises	MA.CC.2.2.7.B.1	M07.B-E.1.1	M07.B-E.1.1.1	Algebra Variable Expression Equation Algebraic expression Coefficient Term Like term Constant Commutative Property Associative Property Distributive Property Identity Property Linear Monomial Factor (verb)
Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program, Chapter 7 • McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters • McGraw Hill / Glencoe Math Interactive Study Guide • MathGames.com and IXL.com - practice activities • Virtual math manipulatives here • Quizlet - vocabulary flash cards					

	• Math Notes (Quizlet flashcards in .pdf format) - Math Notes
	• Helpful videos:
	  ○ Algebraic Expressions (Vocabulary and evaluating expressions)
	  ■ Icon Math: Variable and Coefficients video (good intro)
	  ■ Algebra Lab: Terms, Coefficients, & Constants video
	  ■ Mr. J.: Evaluate Expressions video (I like this guy - short and sweet)
	  ■ Evaluate Expressions in Spanish video (a bit beyond, but Spanish)
	  ○ Properties
	  ■ Mr. J.: Properties of Multiplication video
	  ■ McCarthy Math: Properties of Multiplication video (popular)
	  ■ Properties of Real Numbers in Spanish video
	  ○ Distributive Property
	  ■ MashUp Math: Distributive Property video (good intro)
	  ■ Distributive Property in Spanish video
	  ○ Like Terms
	  ■ Combining Like Terms video (I did this one as an EdPuzzle)
	  ■ MathsRap: Simplifying Expressions song video (combine like terms)
	  ■ Simplifying Expressions in Spanish video (combine like terms)
	  ○ Add Linear Expressions
	  ■
	  ○ Subtract Linear Expressions
	  ■ Mrs. Senger: Subtract Linear Expressions video
	  ■ Mrs. V.: Subtracting Linear Expressions video (I did an EdPuzzle)
	  ○ Factor Linear Expressions
	  ■ Factor Linear Expressions video
	  ○ Others
	  ■ Simplify Expressions in Spanish video (summary/review)
	  ■ Divide Fractions in Spanish - video
	  ■ Silly School Songs: Order of Operations Song
	  ■ Order of Operations - Spanish (5th grade, no exponents)
	  ■ Order of Operations - Spanish (very good! includes exponents)
	  ○

Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes
Summative Assessments	• Chapter Test
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator

	• Simplified directions • Translation tools available

Unit	8. Equations and Inequalities					
Concept / Big Idea	Applying the same step-by-step process to solve equations to find values of unknowns.					
Essential Question	• How are equations and inequalities used to describe and solve multi-step problems?					
Competencies	Students will be able to: • Create equations that describe relationships • Solve linear equations in one variableSolve one-step and multi-step inequalities • Solve compound inequalities and inequalities involving absolute value • Graph inequalities in two variables					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(14 days)	Write and identify linear equations in one variable with one solution, infinitely many solutions, or no solutions.	• Do Nows / Warmups • Direct Instruction • Practice Exercises • Practice Activities • iXL Practice Activities	MA.CC.2.2.8.B.3	M08.B-E.3.1	M08.B-E.3.1.1	reciprocal multiplicative inverse coefficient null set substitution properties Distribute solution
	Solve linear equations that have rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.		MA.CC.2.2.8.B.3	M08.B-E.3.1	M08.B-E.3.1.2	
(9 days)	Write, solve, and/or graph linear inequalities using various methods.		MA.9-12.A.1.1	MA.9-12.A1.1.3	MA.9-12.A1.1.3.1	

Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program, Chapter 8
	  ○ 8a, Lessons (8-1 thru 8-5)
	  ○ 8b Lessons (8-6 thru 8-8)
	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters
	• McGraw Hill / Glencoe Math Interactive Study Guide
	• MathGames.com and IXL.com - practice activities
	• Virtual math manipulatives here
	• Vocabulary flashcards - Quizlet or Quizlet
	• Math Notes (Quizlet flashcards in .pdf format) - Math Notes and Math Notes					

Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes
Summative Assessments	• Chapter Test
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available

Unit	9. Linear Functions, Scatter Plots, and Systems of Equations
Concept / Big Idea	Solve equations when there are 2 variables instead of only 1. Analyze and interpret functions, and use functions to model relationships between quantities. Analyze and solve linear equations and pairs of simultaneous linear equations. Examine linear associations and models .
Essential Understandings	● Explore relations and functions ● Study the properties of functions ● Represent linear functions ● Identify the number of solutions of a system of equations ● Solve systems of equations graphically and algebraically
Competencies	Students will be able to: ● Use scatter plots and lines of fit, and write equations of best-fit lines using linear regression ● Solve systems of linear equations by graphing, substitution, and elimination ● Determine whether a relation is a function. ● Interpret the equation y = mx + b as defining a linear function whose graph is a straight line. ● Give examples of functions that are not linear. ● Construct a function to model a linear relationship between two quantities. ● Describe qualitatively the functional relationship between two quantities by analyzing a graph. ● Interpret solutions to a system of two linear equations in two variables as points of intersection of their graphs. ● Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. ● Use two linear equations in two variables to solve real world mathematical problems.

Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(15 days)	Determine whether a relation is a function. Derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b. Interpret the equation y = mx + b as defining a linear function whose graph is a straight line; give examples of functions that are not linear.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities - iXL activities	CC.2.2.8.C.1 CC.2.2.HS.D.7 CC.2.2.HS.D.10 CC.2.2.HS.C.2 MA.CC.2.2.8.C.1 MA.CC.2.2.8.C.2 MA.CC.2.4.8.B.1	A1.1.1.5 A1.1.2.1 M08.B-F.1.1 M08.B-F.2.1 M08.D-S.1.1	A1.1.1.5.3 A1.1.1.5.1 A1.1.2.1.2 A1.1.2.1.3 A1.2.1.1.3 M08.B-F.1.1.1 M08.B-F.1.1.3 M08.B-F.2.1.2 M08.B-F.2.1.1 M08.D-S.1.1.1 M08.D-S.1.1.2	System of equations, consistent, independent, dependent, inconsistent, substitution, elimination, system of inequalities bivariate data scatter plot

	Describe qualitatively the functional relationship between two quantities by analyzing a graph (increasing or decreasing, linear or nonlinear).					association linear assoc. linear outlier cluster line of best fit conjecture two-way table relative frequency statistics null set substitution
	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function.					
	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative correlation, linear association, and nonlinear association.					
	For scatter plots that suggest a linear association, identify a line of best fit by judging the closeness of the data points to the line.					
(9 days)	Solve real-world and mathematical problems leading to two linear equations in two variables.		CC.2.2.HS.D.10 CC.2.2.8.B.3 CC.2.2.HS.D.9	A1.1.2.2 M08.B-E.3.1	A1.1.2.2.1 A1.1.2.2.2 M08.B-E.3.1.1 M08.B-E.3.1.2 M08.B-E.3.1.3 M08.B-E.3.1.4 M08.B-E.3.1.5	
	Interpret solutions to a system of two linear equations in two variables as points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.		MA.CC.2.2.8.B.3			
	Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.					

Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program (9-1 thru 9-7)
	• Resources from McGraw Hill / Glencoe Math 8 on Scatterplots
	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters
	• McGraw Hill / Glencoe Math Interactive Study Guide
	• MathGames.com and IXL.com - practice activities
	• Virtual math manipulatives here
	• Functions Vocabulary flashcards - Quizlet
	• Functions Math Notes - Math Notes
	• Lines Helpful videos:
	  ○ Ms. Sam's Math Class: Proportional Relationships & Lines - lesson
	  ○ Identify x- and y-intercepts - video
	  ○ Find x- and y-intercepts - video
	  ○ Math Antics: Linear Functions - video
	  ○ Review - slope video
	  ○ Find Slope and y-Intercept from an Equation, in Spanish - video
	  ○ Convert to Slope-Intercept Form, in Spanish - video
	• Scatter Plots Vocabulary flashcards - Quizlet
	• Scatter Plots Math Notes (Quizlet flashcards in .pdf format) - Math Notes
	• Scatter Plots Helpful videos:
	  ○ Mr. Buffington: Scatter Plots - intro, vocab, association - video
	  ○ Scatter Plots - association, make a plot - video
	  ○ MooMoo Math: Scatter Plots and Line of Best Fit - video
	  ○ Review - Slope of a line in y=mx+b form - video
	  ○ Review - Slope Formula by Mr. Buffington - video

Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes
Summative Assessments	• Chapter Test
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available

Unit	10. Geometry - Volume of Circular and Composite Figures					
Concept / Big Idea	Solve real-world and mathematical problems involving volume.					
Essential Understandings	• Find volume of three-dimensional figures • Recognize the relationship between volume of three-dimensional figures					
Competencies	• Apply formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems.					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(7 days)	Apply formulas for the volumes of cones, cylinders, and spheres to solve real-world and mathematical problems. Formulas will be provided.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities	MA.CC.2.3.8.A.1	M08.C-G.3.1	M08.C-G.3.1.1	geometric solid composite solid volume prism radius diameter cylinder cone sphere hemisphere

Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program (12-1 thru 12-3 and 12-5 thru 12-7)
	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters
	• McGraw Hill / Glencoe Math Interactive Study Guide
	• MathGames.com and IXL.com - practice activities
	• Virtual math manipulatives here
	• Vocabulary flashcards - Quizlet
	• Math Notes (Quizlet flashcards in .pdf format) - Math Notes
	• Helpful videos:
	  ○ Math with Mr. J.: Radius and Diameter of Circles - video
	  ○ Math Antics: Volume - video
	  ○ MashUp Math: Volume of a Rectangular Prism - video
	  ○ Math with Mr. J.: Volume of a Rectangular Prism - video
	  ○ Math with Mr. J.: Volume of a Cylinder - video
	  ○ MashUp Math: Practice with Volume of Cylinders - video
	  ○ MashUp Math: Volume of a Cone - video
	  ○ Volume of Composite Figures: cylinder + cone - video (7:00 - end)
	  ○ Volume of Composite Figures: cone + rect. prism - video
	  ○ MashUp Math: Volume of a Sphere - video					

	○ MooMoo Math: Volume of a Hemisphere - video ○ Volume of Composite Figures: cylinder + hemisphere - video (0 - 7:00)
Formative Assessments	● Various do-nows, classwork, homework, exit tickets, and quizzes
Summative Assessments	● Chapter Test
Strategies for ELL and IEP Support	● Textbook has vocabulary available in Spanish ● Clean copy notes ● Online flashcards ● Use of calculator ● Simplified directions ● Translation tools available

Unit	11. Geometry - Congruence, Similarity, Transformations and the Pythagorean Theorem
Concept / Big Idea	Demonstrate an understanding of geometric transformations. Understand and apply the Pythagorean theorem.
Essential Understandings	• Understand Properties of Transformations • Identify Congruent Figures • Recognize legs and hypotenuse to use the Pythagorean Theorem • Understand Distance on the Coordinate Plane
Competencies	• Identify and apply properties of rotations, reflections and translations. • Given a two-dimensional figure on a coordinate plane, describe the effect of dilations, translations, rotations, and reflections. • Apply the converse of the Pythagorean theorem to show a triangle is a right triangle. • Apply the Pythagorean theorem to determine unknown side lengths in right triangles in real-world and mathematical problems. • Apply the Pythagorean theorem to find the distance between two points in a coordinate system.

Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(8 days)	Identify and apply properties of rotations, reflections, and translations.	- Do Now / Warm-Up - Lesson video - Direct instruction - Practice exercises - Practice activities: • Tetris - unblocked; great intro to translations and rotations!! • Factris - multiplication Tetris • Transformations (interactive) • Rotation Demonstration - Desmos	MA.CC.2.3.8.A.2	M08.C-G.1.1	M08.C-G.1.1.1	transformation preimage image translation congruent reflection line of reflection rotation center of rotation dilation center of dilation enlargement reduction scale factor similar / similarity
	Given two congruent figures, describe a sequence of transformations that exhibits the congruence between them.		MA.CC.2.3.8.A.2	M08.C-G.1.1	M08.C-G.1.1.2	
	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures, using coordinates.		MA.CC.2.3.8.A.2	M08.C-G.1.1	M08.C-G.1.1.3	
	Apply the converse of the Pythagorean theorem to show a triangle is a right triangle.		MA.CC.2.3.8.A.3	M08.C-G.2.1	M08.C-G.2.1.1	theorem Pythagoras right angle right triangle hypotenuse legs distance formula converse
	Apply the Pythagorean theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and		MA.CC.2.3.8.A.3	M08.C-G.2.1	M08.C-G.2.1.2	

	three dimensions.					
	Apply the Pythagorean theorem to find the distance between two points in a coordinate system.		MA.CC.2.3.8.A.3	M08.C-G.2.1	M08.C-G.2.1.3	
Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program, Chapter 11, Lessons (11-4 thru 11-8) • Resources on Pythagorean Theorem taken from McGraw Hill / Glencoe Math 8 • McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters • McGraw Hill / Glencoe Math Interactive Study Guide • MathGames.com and IXL.com - practice activities • Virtual math manipulatives here					
Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes					
Summative Assessments	• Chapter Test					
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator • Simplified directions • Translation tools available					

Unit	12. Statistics and Probability					
Concept / Big Idea	Utilizing mathematics to analyze real-world data					
Essential Understandings	• How are statistics used in the real world?					
Competencies	Students will be able to: • Determine which measure of center best describes a set of data • Describe the effects linear transformations have on measures of center and spread					
Dates (estimates only)	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone or PSSA Anchors**	**Keystone / PSSA Eligible Content**	**Vocabulary**
(10 days)	Use measures of dispersion to describe a set of data Use data displays in problem-solving settings and/or to make predictions. Apply probability to practical situations	• Do Nows / Warmups • Direct Instruction • Practice Exercises • Practice Activities • iXL Practice Activities	CC.2.4.HS.B.1 CC.2.4.HS.B.3	A1.2.3.1 A1.2.3.2	A1.2.3.1.1 A1.2.3.2.1 A1.2.3.2.2 A1.2.3.2.3	Variable, quantitative data, qualitative data, measures of center, measures of central tendency, mean, median, mode, percentiles,
Resources	• McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program (Chapter 10) • McGraw Hill / Glencoe Math Accelerated Pre-Algebra Program Teacher Guide, Assessment Masters • McGraw Hill / Glencoe Math Interactive Study Guide • MathGames.com and IXL.com - practice activities • Virtual math manipulatives here					
Formative Assessments	• Various do-nows, classwork, homework, exit tickets, and quizzes					
Summative Assessments	• Chapter Test					
Strategies for ELL and IEP Support	• Textbook has vocabulary available in Spanish • Clean copy notes • Online flashcards • Use of calculator					

	• Simplified directions • Translation tools available