Course Title: Algebra I
Board Approval Date: 07/21/14
Credit / Hours: NA
Reviewed Annually

Course Description:

This course focuses on mastery of the PA Core Standards for the Algebra I Keystone and incorporates the Assessment Anchors and Eligible Content. As students progress through this course they will learn real numbers, solving linear equations and inequalities, functions, linear functions, systems of equations and inequalities, polynomials and factoring, and conclude with a brief previewing of quadratic and/or absolute value functions for Algebra II. Integrated into every lesson are rigorous applications of the standards to prepare students to pass the Algebra I Keystone Exam.

Learning Activities / Modes of Assessment:

Large group instruction	Checklists / Teacher Observation
Small group work	Tests and quizzes
Collaborative Learning	AIMS web tests
CDT assessments	

Instructional Resources:

Teacher Made Resources aligned to Keystones
Odyssey
Khan Academy
Brain Pop
Various other internet resources and iPad apps

Course Pacing Guide

ourse: **Algebra I**

Course Unit (Topic)	**Length of Instruction (Days/Periods)**
1. Real Numbers	20 days
2. Solving Linear	25 days
3. Functions	30 days
4. Linear Functions	35 days
5. Linear Systems	30 days
6. Exponents and Square Roots	10 days
7. Polynomials	25 days
DAYS TOTAL	175 days

Topic: Unit 1: Real Numbers
Days: 20
Subject(s): Math
Grade(s): 7th, 8th

Know:	Understand:	Do:
Rational numbers Irrational numbers Terminating Decimals Repeating Decimals Real numbers Degree Whole numbers Integers Natural numbers Order of Operation Coefficient Absolute Value	The real number system consists of subsets of numbers.	A1.1.1.1.1 Compare and/or order any real numbers. Note: Rational and irrational may be mixed. A1.1.1.3.1 Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems. Note: Exponents should be integers from -10 to 10. A1.1.1.4.1 Use estimation to solve problems.

Topic: Unit 2: Solving Linear
Days: 25
Subject(s): Math
Grade(s): 7th, 8th

Know:	Understand:	Do:
Additive Inverse Multiplicative Inverse Commutative Property Associative Property Identity Property Distributive Property Multiplicative Property of Zero Additive Property of Equality Multiplicative Property of Equality Property of Equality Linear Equation Transforming Linear Inequality Compound Inequality Absolute Value Inequality Solution Set Polynomial Monomial Binomial Trinomial Like Terms	How to solve linear equations and inequalities	A1.1.1.5.1 Add, subtract, and/or multiply polynomial expressions (express answers in simplest form). Note: Nothing larger than a binomial multiplied by a trinomial. A1.1.2.1.1 Write, solve, and/or apply a linear equation (including problem situations). A1.1.2.1.2 Use and/or identify an algebraic property to justify any step in an equation-solving process. A1.1.2.1.3 Interpret solutions to problems in the context of the problem situation. A1.1.3.1.1 Write or solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities). A1.1.3.1.2 Identify or graph the solution set to a linear inequality on a number line. A1.1.3.1.3 Interpret solutions to problems in the context of the problem situation.

Topic: Unit 3: Functions
Days: 30
Subject(s): Math
Grade(s): 7th, 8th

Know:	Understand:	Do:
Relation Function Domain Range Inverse Independent variable Dependent variable Ordered pair Quadrant Vertical Line Test Geometric Sequence Arithmetic Sequence Linear Function Rate of Change	How to determine if a relation is a function.	A1.2.1.1.1 Analyze a set of data for the existence of a pattern algebraically and/or graphically. A1.2.1.1.2 Determine whether a relation is a function, given a set of points or a graph. A1.2.1.1.3 Indentify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table). A1.2.1.2.1 Create, interpret, and/or use the equation, graph, or table of a linear function. A1.2.1.2.2 Translate from one representation of a linear function to another (i.e. graph, table, and equation).

Topic: Unit 4: Linear Functions
Days: 35
Subject(s): Math
Grade(s): 7th, 8th

Know:	Understand:	Do:
rate of change linear slope x-intercept y-intercept point-slope standard form slope-intercept form rise run parallel perpendicular	How to write linear functions and transform them into the different forms.	A1.2.2.1.1 Identify, describe, and/or use constant rates of change. A1.2.2.1.2 Apply the concept of linear rate of change (slope) to solve problems A1.2.2.1.3 Write or identify a linear equation when given: -- the graph of the line, or -- two points on the line, or -- the slope &a point on the line A1.2.2.1.4 Determine the slope and/or y-intercept represented by a linear equation or graph A1.2.2.2.1 Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.

Topic: Unit 5: Linear Systems
Days: 30
Subject(s): Math
Grade(s): 7th, 8th

Know:	Understand:	Do:
Elimination Method Linear Combination Substitution Method Point of Intersection No Solution Identity Systems of Linear Equations Systems of Linear Inequalities Solution Region		A1.1.2.2.1 Write and/or solve a system of linear equations (including problem situations) using graphing, substitution and/or elimination. Note: Limit systems to linear equations A1.1.2.2.2 Interpret solutions to problems in the context of the problem situation. Note: Limit systems to two linear equations A1.1.3.2.1 Write and/or solve a system of linear inequalities using graphing. Note: Limit systems to two linear inequalities. A1.1.3.2.2 Interpret solutions to problems in teh contet of the problem situation. Note: Limit systems to two linear inequalities.

Topic: Unit 6: Exponents & Square Roots
Days: 10
Subject(s): Math
Grade(s): 7th, 8th

Know:	Understand:	Do:
Radicals Radicand Exponents Powers Power of a Power Power of Products Power of Quotients Square Rots Cube Roots		A1.1.1.1.2 - Simplify square roots (e.g., 24 = 26). A1.1.1.3.1 - Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems. Note: Exponents should be integers from 10 to 10.

Topic: Unit 7: Polynomials
Days: 25
Subject(s): Math
Grade(s): 7th, 8th

Know:	Understand:	Do:
Quadratic Expression Factor Guess and Check Method Difference of Squares Perfect Square Trinomial Grouping GCF Rational Expression Restriction	How to factor quadratic expressions.	A1.1.1.5.2 Factor algebraic expressions, including difference of squares and trinomials. A1.1.1.5.3 Simplify/reduce a rational algebraic expression.