Curriculum Map: Algebra I 2022-23

Course: ALGEBRA 1 Sub-topic: Algebra

Grade(s): 9 to 10

Course Description:	This course provides a foundation of study essential for further mathematical investigation. Topics covered include variables and expressions, exploring rational numbers, ratio and proportion, relations and functions, solve and graph linear equations and inequalities, word problems, and solve systems of equations and inequalities. Students will also relate and apply these algebraic concepts to geometry, statistics, data analysis, and probability.
Course Textbooks, Workbooks, Materials Citations:	Textbook: Algebra 1 by Glencoe McGraw-Hill Copyright 2010

Unit: Unit 0: Review Arithmetic Skills

Timeline: Week 1 to 3

Unit Description:	This unit will focus on reviewing pre-requisite mathematical skills that students should be proficient at before learning Algebra 1 material. This includes knowing the terms that define all real numbers, operations with rational numbers, square roots and perfect squares, and working with percents.
Unit Essential Questions:	What does it mean to estimate or analyze numerical quantities? What makes a tool and/or strategy appropriate for a given task? How is mathematics used to quantify, compare, represent, and model numbers?
Unit Big Ideas:	Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools. Mathematical relationships among numbers can be represented, compared, and communicated.
Unit Materials:	Textbook, SmartSlate, and Worksheets
Unit Assignments:	Various textbook problems and worksheets IXL skills Quizzes and Test
Unit Key Terminology & Definitions :	Real, rational, irrational, integer, natural number, whole number, square root, perfect square, percent proportion,

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.E.2 (Advanced)	Identify and choose appropriate processes to compute fluently with multi-digit numbers.
CC.2.1.6.E.3 (Advanced)	Develop and/or apply number theory concepts to find common factors and multiples.
CC.2.1.6.E.4 (Advanced)	Apply and extend previous understandings of numbers to the system of rational numbers.
CC.2.1.7.D.1 (Advanced)	Analyze proportional relationships and use them to model and solve real-world and mathematical problems.
CC.2.1.7.E.1 (Advanced)	Apply and extend previous understandings of operations with fractions to operations with rational numbers.
CC.2.1.8.E.1 (Advanced)	Distinguish between rational and irrational numbers using their properties.

CC.2.1.HS.F.3 (Advanced)	Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.
CC.2.1.HS.F.4 (Advanced)	Use units as a way to understand problems and to guide the solution of multi-step problems.
CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

(* standards consolidated from Topic level)

Topic: Lesson 1: The Real Number System (section 0-2)

Minutes for Topic: 88

Core Lesson Description: Students will learn about the various types of real numbers, including: rational, irrational, integer, whole, and natural.

Core Lesson Student Learning Objectives: By the end of this lesson, students should be able to classify real numbers into the following categories: rational, irrational, integer, whole, and natural. Students should also be able to place any real number in the appropriate location on a number line.

Core Lesson Essential Questions:

What classifies a number as being rational or irrational?

What is an integer?

What is a whole number? How is this different than an integer?

What is a natural number? How is this category different than the whole numbers?

Core Lesson Big Ideas:

Knowing the difference between rational and irrational.

Knowing the differences and similarities between integer, whole, and natural numbers.

Core Lesson Key Terminology & Definitions:

Real

Rational

Irrational

Integer

Whole number

Natural number

Square root

Perfect square

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.8.E.1 (Advanced) Distinguish between rational and irrational numbers using their properties.

Topic: Lesson 2: Adding Positive and Negative Integers (section 0-3)

Minutes for Topic: 44

Core Lesson Description: This lesson will serve as a refresher on how to add positive and negative integers.

Core Lesson Student Learning Objectives: By the end of this lesson, students should be able to add positive and negative integers without the aid of a calculator.

Core Lesson Essential Questions:

How do I add when the signs are the same?

How do I add when the signs are different?

Core Lesson Big Ideas: Adding two positive integers

Adding two negative integers

Adding a small negative and a large positive integer

Adding a big negative and a small positive integer

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.E.2 (Advanced) Identify and choose appropriate processes to compute fluently with multi-digit numbers.

Topic: Lesson 3: Subtracting Integers (section 0-3)

Minutes for Topic: 44

Core Lesson Description: This lesson will serve as a refresher on how to subtract positive and negative integers.

Core Lesson Student Learning Objectives: By the end of this lesson, students should be able to subtract positive and negative integers without the aid of a calculator.

Core Lesson Essential Questions: How can a make this subtraction look like addition?

Core Lesson Big Ideas: Changing the subtraction problem to look like addition (e.g. 7 - 13 can be written as 7 + (-13)).

Being aware of double negatives (7-(-13)).

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.E.2 (Advanced) Identify and choose appropriate processes to compute fluently with multi-digit numbers.

Topic: Lesson 4: Multiplying and Dividing Integers (section 0-3)

Minutes for Topic: 44

Core Lesson Description: This lesson will serve as a refresher on how to multiply and divide integers.

Core Lesson Student Learning Objectives: By the end of this lesson, students should be able to multiply and divide integers without the use of a calculator.

Core Lesson Big Ideas: Knowing your times tables is helpful

Sign rules for multiplying and dividing

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.E.2 (Advanced) Identify and choose appropriate processes to compute fluently with multi-digit numbers.

Topic: Lesson 5: Adding and Subtracting Rational Numbers (section 0-4)

Minutes for Topic: 88

Core Lesson This is similar to lessons 2 and 3, but using rational numbers instead of integers. Rational numbers include

Description: decimals and fractions.

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.E.3 (Advanced)	Develop and/or apply number theory concepts to find common factors and multiples.
CC.2.1.6.E.4 (Advanced)	Apply and extend previous understandings of numbers to the system of rational numbers.

Topic: Lesson 6: Multiplying and Dividing Rational Numbers (section 0-5)

Minutes for Topic: 88

Core Lesson Description: This is similar to lesson 4, but using rational numbers instead of integers. Rational numbers include decimals and fractions.

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.7.E.1 (Advanced)	Apply and extend previous understandings of operations with fractions to operations with rational numbers.

Topic: Lesson 7: The Percent Proportion (section 0-6)

Minutes for Topic: 88

Core Lesson Description: This lesson will serve as a refresher on how to use percents and percent proportions in the real world.

Core Lesson Student Learning Objectives: By the end of this lesson, students should be able to read, set up, and solve various types of percent problems.

Core Lesson Essential Questions:

What is the problem asking me to find?

Do I have the "part", "whole", or percent?

Does this answer make sense in context?

Core Lesson Big Ideas:

Finding a percent of a whole.

Being able to determine if you are given the "part", "whole", or percent in a word problem.

Finding out what percent of the "whole" is the given "part".

Find out the "part" given the percent and the "whole".

Core Lesson Key Terminology & Definitions:

Percent

Percent proportion

part

whole

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.7.D.1 (Advanced)	Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

Topic: Throughout Unit 0: Perfect Squares (up to 16) and Square Roots (up to 256)

Core Lesson Description:	Throughout Unit 0, I plan to have students work on memorizing the perfect square values (up to 16 squared). Then, they will work backward and memorize the square roots for these numbers (up to the square root of 256).
Core Lesson Student Learning Objectives:	By the end of Unit 0, students should know their perfect squares up to 16^2 and the square roots up to and including the square root of 256.

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.3 (Advanced)	Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.
CC.2.1.HS.F.4 (Advanced)	Use units as a way to understand problems and to guide the solution of multi-step problems.
CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Unit: Unit 1: Expressions & Equations

Timeline: Week 3 to 7

Unit Description:	The unit is focused on some review information (such as the distributive property, how to correctly perform order of operations, and solving one/two step equations) as well as new material like solving multi-step equations. Students will spend a large chunk of time on solving all different types of equations. It is essential that students become proficient at solving equations early in this course, as this skill is used very often in the time that remains as well as in future math courses.
Unit Essential Questions:	How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations? How is mathematics used to quantify, compare, represent, and model numbers?
Unit Big Ideas:	Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations. Mathematical relationships among numbers can be represented, compared, and communicated.
Unit Materials:	Textbook, SmartSlate, worksheets, calculators
Unit Assignments:	Various textbook problems and worksheets IXL skills Quizzes and test
Unit Key Terminology & Definitions :	variable, term, base, exponent, power, product, algebraic expression, evaluate, order of operations, like terms, coefficient, equation

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.7.E.1 (Advanced)	Apply and extend previous understandings of operations with fractions to operations with rational numbers.
CC.2.2.5.A.1 (Advanced)	Interpret and evaluate numerical expressions using order of operations.
CC.2.2.HS.D.1 (Advanced)	Interpret the structure of expressions to represent a quantity in terms of its context.
CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.
CC.2.2.HS.D.3 (Advanced)	Extend the knowledge of arithmetic operations and apply to polynomials.

CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

(* standards consolidated from Topic level)

Topic: Lesson 1: Variables and Expressions (section 1-1)

Minutes for Topic: 44

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.1 (Advanced)	Interpret the structure of expressions to represent a quantity in terms of its context.
CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.
CC.2.2.HS.D.3 (Advanced)	Extend the knowledge of arithmetic operations and apply to polynomials.

Topic: Lesson 2: Order of Operations (section 1-2)

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.7.E.1 (Advanced)	Apply and extend previous understandings of operations with fractions to operations with rational numbers.
CC.2.2.5.A.1 (Advanced)	Interpret and evaluate numerical expressions using order of operations.

Topic: Lesson 3: The Distributive Property (section 1-4)

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.3 (Advanced)	Extend the knowledge of arithmetic operations and apply to polynomials.

Topic: Lesson 4: Solving One- and Two-Step Equations (section 2-2 and 2-3) *variable on one side*

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Topic: Lesson 5: Solving Equations while using the Distributive Property (section 2-4) *variable on one side*

Minutes for Topic: 44

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.
CC.2.2.HS.D.3 (Advanced)	Extend the knowledge of arithmetic operations and apply to polynomials.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Topic: Lesson 6: Solving Equations *variable on both sides* (section 2-4)

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.
CC.2.2.HS.D.3 (Advanced)	Extend the knowledge of arithmetic operations and apply to polynomials.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Topic: Lesson 7: Solving Equations *multiple terms on both sides* (section 2-4)

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.
CC.2.2.HS.D.3 (Advanced)	Extend the knowledge of arithmetic operations and apply to polynomials.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Topic: Lesson 8: Solving equations with multiple fractions and/or mixed numbers

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.1 (Advanced)	Interpret the structure of expressions to represent a quantity in terms of its context.
CC.2.2.HS.D.2 (Advanced)	Write expressions in equivalent forms to solve problems.
CC.2.2.HS.D.3 (Advanced)	Extend the knowledge of arithmetic operations and apply to polynomials.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Unit: Unit 2: Second half of chapter 2 (Absolute value, ratios, proportions, percent change, tax, discount, literal equations, dimensional analysis, weighted averages)

Timeline: 7 Weeks

Unit Description: This unit covers a wide range of topics, including: solving absolute value equations, dealing with ratios and proportions, calculating percent change in a scenario, calculating taxes or discounts on items, solving equations for a specified variable, using dimensional analysis to convert units, and tackling weighted average problems. Students should be able to see how all of these topics relate to the world around them, and how they can use this information to answer questions in every day life.

Unit Essential Questions:

How is mathematics used to quantify, compare, represent, and model numbers?

How can mathematics support effective communication?

What does it mean to estimate or analyze numerical quantities?

What makes a tool and/or strategy appropriate for a given task?

Unit Big Ideas:

Mathematical relationships among numbers can be represented, compared, and communicated.

Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.

Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

Unit Materials: Textbook, SmartSlate, worksheets, calculators

Unit Assignments:

Various textbook problems and worksheets

IXL skills

Quizzes and test

Unit Key Terminology & Definitions : absolute value, ratio, proportion, unit rate, scale model, percent of change, tax, percent discount, literal equation, dimensional analysis, weighted average, mixture problem, rate problem

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.D.1 (Advanced)	Understand ratio concepts and use ratio reasoning to solve problems.
CC.2.1.HS.F.2 (Advanced)	Apply properties of rational and irrational numbers to solve real world or mathematical problems.

CC.2.1.HS.F.3 (Advanced)	Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.
CC.2.1.HS.F.4 (Advanced)	Use units as a way to understand problems and to guide the solution of multi-step problems.
CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
CC.2.2.HS.D.6 (Advanced)	Extend the knowledge of rational functions to rewrite in equivalent forms.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

(* standards consolidated from Topic level)

Topic: Lesson 1: Absolute Value Equations (section 2-5)

Minutes for Topic: 220

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

Topic: Lesson 2: Ratios and Proportions (section 2-6)

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.D.1 (Advanced)	Understand ratio concepts and use ratio reasoning to solve problems.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Topic: Lesson 3: Percent of Change (section 2-7)

Minutes for Topic: 44

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.6.D.1 (Advanced)	Understand ratio concepts and use ratio reasoning to solve problems.
CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Topic: Lesson 4: Tax and Discount (section 2-7)

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.2 (Advanced)	Apply properties of rational and irrational numbers to solve real world or mathematical problems.
CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Topic: Lesson 5: Literal Equations *solving a formula/equation for a specific variable* (section 2-8)

Minutes for Topic: 220

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

Topic: Lesson 6: Dimensional Analysis (section 2-8) *converting units of measure*

Minutes for Topic: 220

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.3 (Advanced)	Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.
CC.2.1.HS.F.4 (Advanced)	Use units as a way to understand problems and to guide the solution of multi-step problems.
CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
CC.2.2.HS.D.6 (Advanced)	Extend the knowledge of rational functions to rewrite in equivalent forms.

Topic: Lesson 7: Weighted Averages (section 2-9)

Minutes for Topic: 220

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.4 (Advanced)	Use units as a way to understand problems and to guide the solution of multi-step problems.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

Unit: Unit 3: Linear Functions

Timeline: 5 Weeks

Unit Description: In this unit, we will explore the difference between a relation and a function, look at functions in the real world, evaluate functions, graph lines by making a table, and begin our discussion of slope. Students should be able to see how functions are all around them and be able to create linear graphs based on evaluating a given function for a few x-values.

Unit Essential Questions:

How is mathematics used to quantify, compare, represent, and model numbers?

How are relationships represented mathematically?

How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?

How can recognizing repetition or regularity assist in solving problems more efficiently?

Unit Big Ideas:

Mathematical relationships among numbers can be represented, compared, and communicated.

Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.

Patterns exhibit relationships that can be extended, described, and generalized.

Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.

Unit Materials: Textbook, SmartSlate, worksheets, calculators

Unit Assignments:

Various textbook problems and worksheets

IXL skills

Quizzes and test

Unit Key Terminology & Definitions : Coordinate system/plane, x-axis, y-axis, ordered pair, relation, domain, range, independent and dependent variables, function, function notation (using f(x) in place of y), linear function, slope / rate of change

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.1 (Advanced)	Use the concept and notation of functions to interpret and apply them in terms of their context.

CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.

(* standards consolidated from Topic level)

Topic: Lesson 1: Relations (section 1-6)

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.

Topic: Lesson 2: Functions (section 1-7)

Minutes for Topic: 220

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.1 (Advanced)	Use the concept and notation of functions to interpret and apply them in terms of their context.
CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.

Topic: Lesson 3: Graphing Linear Equations *by making a table & finding the x- and y-intercepts* (section 3-1)

Minutes for Topic: 176

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.1 (Advanced)	Use the concept and notation of functions to interpret and apply them in terms of their context.
CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.

Topic: Lesson 4: Slope (section 3-3)

Minutes for Topic: 220

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.1 (Advanced)	Use the concept and notation of functions to interpret and apply them in terms of their context.
CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.

Unit: Unit 4: Slope-Intercept Form of a Linear Equation

Timeline: 5 Weeks

Unit Description:	This unit continues with the discussion of slope and extends that idea with slope-intercept form of a line, writing equations of lines, parallel and perpendicular lines, and writing an equation that represents a scatter plot. Students will then use these equations to interpret data and predict future values.
Unit Essential	How can mathematics support effective communication?

Questions:

How are relationships represented mathematically?

How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations?

How can data be organized and represented to provide insight into the relationship between quantities?

How can probability and data analysis be used to make predictions?

Unit Big Ideas: Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.

Numerical quantities, calculations, and measurements can be estimated or analyzed by using appropriate strategies and tools.

Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.

Data can be modeled and used to make inferences.

Unit Materials: Textbook, SmartSlate, worksheets, calculators

Unit Assignments: Various textbook problems and worksheets

IXL skills

Quizzes and test

Unit Key Terminology & Definitions : slope-intercept form, standard form, point-slope form, x-intercept, y-intercept, parallel line, perpendicular line, scatter plot, line of fit, linear interpolation and extrapolation

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.3 (Advanced)	Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.
CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.
CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.10 (Advanced)	Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

(* standards consolidated from Topic level)

Topic: Lesson 1: Graphing in Slope-intercept form (section 4-1)

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.
CC.2.2.HS.D.10 (Advanced)	Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Topic: Lesson 2: Writing the slope-intercept form of a line given the slope and either (a) the y-intercept, (b) one point on the line, or (c) no slope, just two points (section 4-2)

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.

Topic: Lesson 3: Slope-intercept word problems (section 4-2)

Minutes for Topic: 308

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.

Topic: Lesson 4: Parallel Lines (section 4-4)

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.

Topic: Lesson 5: Perpendicular Lines (section 4-4)

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.

Topic: Lesson 6: Scatter Plots and Lines of Best Fit (section 4-5)

Minutes for Topic: 176

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.3 (Advanced)	Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays.
CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
CC.2.2.HS.C.2 (Advanced)	Graph and analyze functions and use their properties to make connections between the different representations.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.
CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.10 (Advanced)	Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Unit: Unit 5: Linear Inequalities

Timeline: 3 Weeks

Unit Description:	This unit will focus on writing and solving linear inequalities to represent various scenarios.
Unit Essential	How is mathematics used to quantify, compare, represent, and model numbers?

Questions:

How are relationships represented mathematically?

How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?

Unit Big Ideas: Mathematical relationships among numbers can be represented, compared, and communicated.

Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.

Unit Materials: Textbook, SmartSlate, worksheets, calculators

Unit Assignments: Various textbook problems and worksheets

IXL skills

Quizzes and test

Unit Key Terminology & Definitions : one variable inequality, compound inequality, less than, greater than, less than or equal to, greater than or equal to

STANDARDS:

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

(* standards consolidated from Topic level)

Topic: Lesson 1: Solving Inequalities by Addition/Subtraction

Minutes for Topic: 44

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Topic: Lesson 2: Solving Inequalities by Multiplication/Division (section 5-2)

Minutes for Topic: 44

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Topic: Lesson 3: Solving Multi-Step Inequalities (section 5-3)

Minutes for Topic: 44

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

Topic: Lesson 4: Solving Compound Inequalities (section 5-4)

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

Topic: Lesson 5: Setting up word problems that deal with inequalities

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

Unit: Unit 6: Systems of Equations and Inequalities

Timeline: 6 Weeks

Unit Description: In this unit, we will discuss systems of equations and inequalities. Systems of equations are used to find two unknown values and generally has one specific answer. This answer can be found with a variety of methods, including: graphing, substitution, and elimination. We will cover all three methods. Students will also write their own systems of equations, then solve and interpret their answers.

An inequality or a system of inequalities can have an unlimited number of answers, which students will see by graphing the system.

If time allows, students will read scenarios, write their own systems of inequalities, solve, and interpret their answers.

Unit Essential Questions: How is mathematics used to quantify, compare, represent, and model numbers?

How are relationships represented mathematically?

How can expressions, equations and inequalities be used to quantify, solve, model, and/or analyze mathematical situations?

Unit Big Ideas: Mathematical relationships among numbers can be represented, compared, and communicated.

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.

Unit Materials: Textbook, SmartSlate, worksheets, calculators

Unit Assignments: Various textbook problems and worksheets

IXL skills

Quizzes and test

Unit Key Terminology & Definitions : system of equations, no solution, infinitely many solutions, substitution, elimination, least common multiple, two-variable inequality, system of inequalities

STANDARDS: **STANDARDS**

STATE: PA Core Standards (2014)

CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.
CC.2.2.HS.D.1 (Advanced)	Interpret the structure of expressions to represent a quantity in terms of its context.
CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.
CC.2.2.HS.D.10 (Advanced)	Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

(* standards consolidated from Topic level)

Topic: Lesson 1: Graphing Systems of Equations (section 6-1)

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
CC.2.2.HS.D.7 (Advanced)	Create and graph equations or inequalities to describe numbers or relationships.
CC.2.2.HS.D.10 (Advanced)	Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Topic: Lesson 2: Solving Systems of Equations by Substitution (section 6-2)

Minutes for Topic: 220

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
CC.2.2.HS.D.1 (Advanced)	Interpret the structure of expressions to represent a quantity in terms of its context.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

Topic: Lesson 3: Solving Systems of Equations by Elimination

Minutes for Topic: 220

STANDARDS

STATE: PA Core Standards (2014)

CC.2.1.HS.F.5 (Advanced)	Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.
CC.2.2.HS.D.1 (Advanced)	Interpret the structure of expressions to represent a quantity in terms of its context.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.
CC.2.2.HS.D.9 (Advanced)	Use reasoning to solve equations and justify the solution method.

Topic: Lesson 4: Systems of Equations Applications *solve by any method* (section 6-5)

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.3 (Advanced)	Write functions or sequences that model relationships between two quantities.
CC.2.2.HS.C.6 (Advanced)	Interpret functions in terms of the situations they model.
CC.2.2.HS.D.8 (Advanced)	Apply inverse operations to solve equations or formulas for a given variable.

CC.2.2.HS.D.9 (Advanced) Use reasoning to solve equations and justify the solution method.

CC.2.2.HS.D.10 (Advanced) Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Topic: Lesson 5: Graphing One Linear Inequality (section 5-6)

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.10 (Advanced) Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Topic: Lesson 6: Graphing Systems of Linear Inequalities (section 6-8)

Minutes for Topic: 88

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.D.10 (Advanced) Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.

Topic: Lesson 7: Setting up and answering questions about situations using inequalities

Minutes for Topic: 132

STANDARDS

STATE: PA Core Standards (2014)

CC.2.2.HS.C.3 (Advanced) Write functions or sequences that model relationships between two quantities.

CC.2.2.HS.D.10 (Advanced) Represent, solve, and interpret equations/inequalities and systems of equations/inequalities algebraically and graphically.