Course Title: Algebra I~HS
Board Approval Date: 6/2018
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
Small group work
Collaborative Learning
CDT assessments

Checklists / Teacher Observation
Tests and quizzes

Instructional Resources:

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

Course Pacing Guide

Course: **Algebra I**

Course Unit (Topic)	**Length of Instruction (Days/Periods)**
1. Data Analysis	25 days
2. Coordinate Geometry & Slope	35 days
3. Functions	15 days
4. Linear Equations & Inequalities	55 days
5. Real Numbers	40 days
DAYS TOTAL	170 days

Topic: Unit 1 Data Analysis
Subject(s): Math

Days: 25
Grade(s): 9th, 10th

Know:	Understand:	Do:
Bar graph Circle graph Stem and leaf plot Box and whisker plot Mean Median Mode Range Interquartile range (IQR) Independent probability Dependent probability	How to read and analysis data displays and use data displays to calculate mean, median, mode and range How to calculate the likelihood of an event using independent and dependent probability	A1.2.3.2.1 Estimate or calculate to make predictions based on a circle, line, bar graph, measures of central tendency, or other representations. A1.2.3.2.2 Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations). A1.2.3.3.1 Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal or percent). A2.2.3.2.3 Use probability for independent, dependent or compound events to predict outcomes.

Student Learning Map

Days: 15

Course/Subject: Algebra I
Date: June 2022
Topic: Unit 1 – Data Analysis
School District: CCSD

Key Learning: There are many ways to display data and use those displays to calculate mean, median, mode and range.
Probability is the likelihood that an event will occur.

Unit Essential Question: How can we display data in different forms? How do we calculate the probability of independent and dependent events?

Concept: Data Displays	Concept: Independent and Dependent Probability	Concept:
Lesson Essential Questions: • How do we create and interpret data displays?	Lesson Essential Questions: • How do we calculate and interpret independent and dependent probabilities?	Lesson Essential Questions:
Vocabulary: • Box and whisker plot, stem and leaf plot, bar graph, circle graph, mean, median, mode, range, IQR	Vocabulary: • Independent probability, dependent probability	Vocabulary:

Additional Information/Resources:

Curriculum: CCSD CURRICULUM

PENNSYLVANIA

Course: Algebra I

Date: 6/2022

Topic: Unit 2: Coordinate Geometry & Slope

Days: 35

Grade(s): 9th, 10th

Subject(s): Math

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.

Student Learning Map

Days: 35

Course/Subject: Algebra I/ Math
Date: June 2022
Topic: Unit 2 – Coordinate Geometry
School District: CCSD

Key Learning: Students will learn how to write and graph linear functions, calculate slope, and write linear equations in different forms.

Unit Essential Question: How do you write and graph linear equations in different forms and calculate slope?

Concept: Slope of Linear Equations	Concept: Forms of Linear Equations	Concept: Graph Linear Equations
Lesson Essential Questions: • How do we classify and calculate slope of linear equations in the coordinate plane?	Lesson Essential Questions: • How do we write the equations of line given in chart(table), graph and data?	Lesson Essential Questions: • How do we graph a line given in slope intercept form, standard form, or a table of values?
Vocabulary: • Rate of change, slope, rise, run, positive, negative, zero, undefined	Vocabulary: • Slope-intercept form, standard form, point-slope form	Vocabulary: • Slope, x-intercept, y-intercept, coordinate plane

Additional Information/Resources:

Curriculum: CCSD CURRICULUM

PENNSYLVANIA

Course: Algebra I

Date: 6/2022

Topic: Unit 3: Functions

Days: 15

Subject(s): Math

Grade(s): 9th, 10th

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 Identify 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).

Student Learning Map

Days: 15

Course/Subject: Algebra I/ Math
Date: June 2022
Topic: Unit 3 – Functions
School District: CCSD

Key Learning: Students will identify relations and functions and state the domain and range of each.

Unit Essential Question: How do you determine if a relation is a function?

Concept: Domain and Range of relations and functions	Concept: Identify and interpret linear functions	Concept:
Lesson Essential Questions: • How do we identify a function and determine the domain and range?	Lesson Essential Questions: • How do we identify and interpret linear functions?	Lesson Essential Questions:
Vocabulary: • Relation, function, domain, range, vertical line test	Vocabulary: • Rate of change, slope, y-intercept, function	Vocabulary:

Additional Information/Resources:

Curriculum: CCSD CURRICULUM

PENNSYLVANIA

Course: Algebra I

Date: 6/2022

Topic: Unit 4: Linear Equations & Inequalities

Days: 55

Grade(s): 7th, 8th

Subject(s): Math

Know:	Understand:	Do:
Linear Equation Linear Inequality Compound Inequality Absolute Value Inequality Solution Set Elimination Method Substitution Method Point of Intersection No Solution Identity Systems of Linear Equations Systems of Linear Inequalities Solution Region	How to transform and solve one and two variable equations and inequalities	A1.1.2.11 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 strep 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. 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 the content of the problem situation. Note: Limit systems to two linear inequalities.

Student Learning Map

Days: 55
Course/Subject: Algebra I/ Math
Date: June 2022
Topic: Unit 4 – Linear equations and inequalities
School District: CCSD

Key Learning: . Students will be able to solve linear equations and inequalities, systems of equations and inequalities, and absolute value equations and inequalities

Unit Essential Question: How do we solve equations, inequalities and linear systems including those with absolute value?

Concept: Linear Equations and Inequalities	Concept: Systems of equations and inequalities	Concept: Absolute Value equations and inequalities
Lesson Essential Questions: • How do we solve linear equations and inequalities?	Lesson Essential Questions: • How do we solve systems of equations? • How do we solve systems of linear inequalities?	Lesson Essential Questions: • How do we solve and interpret absolute value equations and inequalities?
Vocabulary: • Greater than, less than, equal to, inverse, compound inequality, solution	Vocabulary: • Substitution, elimination, graphing, shading, greater than, less than, solution	Vocabulary: • Absolute value, solution, number line

Additional Information/Resources:

Topic: Unit 5: Real Numbers Days: 40
Subject(s): Math Grade(s): 9th, 10th

Know:	Understand:	Do:
Subsets of Real numbers Degree Whole numbers Integers Natural numbers Order of Operations Absolute Value Radicals/Radicand Exponents/Powers Power of a Power Power of Quotients GCF/LCM Factoring Polynomials	The real number system consists of subsets of numbers. How to Factor polynomials	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. 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. 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

Student Learning Map

Days: 40

Course/Subject: Algebra I/ Math
Date: June 2022
Topic: Unit 5 – Real Numbers
School District: CCSD

Key Learning: . Students will be able to classify real numbers, simplify algebraic expressions, and use the properties of real numbers to simplify.

Unit Essential Question: How do we classify numbers and simplify algebraic expressions?

Concept: Classify Real Numbers	Concept: Exponents and Square Roots	Concept: Polynomials
Lesson Essential Questions: • How do we compare and order real numbers?	Lesson Essential Questions: • How do we simplify square roots?	Lesson Essential Questions: • How do we factor polynomial expressions? • How do we simplify rational expressions?
Vocabulary: • Rational, irrational, integer, whole number, counting number, properties of real numbers, inverse, identity	Vocabulary: • Radical, radicand, index, simplest radical form	Vocabulary: • Factor, monomial, binomial, trinomial, GCF, numerator, denominator

Additional Information/Resources: