**COURSE DESCRIPTION**

**Course Title:** Algebra I College Preparatory

**Course Number:** 00221

**Course Prerequisites:** Grade of 75% or higher in Pre-Algebra 8

**Course Description:** This course provides an in-depth look at the foundation of algebraic theory that will be expanded in Algebra II College Preparatory, Geometry College Preparatory, and additional advanced mathematics courses. It uses practical problems to apply theory and connect algebra to the real world. Algebra I College Preparatory is intended for students planning on pursuing higher education, particularly those whose primary interests are in the fields that require strong background in math or science. Earning Proficient or Advanced on the Algebra Keystone Exam is a possible pathway element for students to meet graduation requirements. If this state mandated test is not passed students will retake the exam. District marking period assessments and final exam are required.

**Suggested Grade Level**: Grade 9

**Length of Course:** Two Semesters

**Units of Credit:** 1

**PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:**

CSPG #50 Mathematics (7-12), CSPG #53 Middle School Mathematics (6-9)

To find the CSPG information, go to [CSPG](https://www.education.pa.gov/Educators/Certification/Staffing%20Guidelines/Pages/default.aspx)

**Certification verified by the WCSD Human Resources Department:** [x] Yes [ ] No

**WCSD STUDENT DATA SYSTEM INFORMATION**

**Course Level:** Academic

**Mark Types:** Check all that apply.

[x] F – Final Average [x] MP – Marking Period [x] EXM – Final Exam

**GPA Type**: [ ]  GPAEL-GPA Elementary [ ]  GPAML-GPA for Middle Level [x]  NHS-National Honor Society

[x]  UGPA-Non-Weighted Grade Point Average [x]  GPA-Weighted Grade Point Average

**State Course Code**: 02052

To find the State Course Code, go to [State Course Code](https://nces.ed.gov/forum/sced.asp), download the Excel file for *SCED*, click on SCED 6.0 tab, and choose the correct code that corresponds with the course.

**TEXTBOOKS AND SUPPLEMENTAL MATERIALS**

**Board Approved Textbooks, Software, and Materials:**

**Title:**  *enVision Algebra 1*

**Publisher:** SAVVAS Learning Company, LLC.

**ISBN #:**  978-0-328-93154-5

**Copyright Date:** 2018

**WCSD Board Approval Date:** 6/28/2020

**Supplemental Materials:** Kuta Software, Get More Math, pdesas.org

**Curriculum Document**

**WCSD Board Approval:**

**Date Finalized:** 5/23/2022

**Date Approved:**  6/13/2022

**Implementation Year:** 2022-2023

**SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS**

The teacher shall make appropriate modifications to instruction and assessment based on a student’s Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

**SCOPE AND SEQUENCE OF CONTENT, AND CONCEPTS**

**Marking Period 1: Probability, Solving Equations and Inequalities**

* Probability: Simple, Compound
* Operations of Real Numbers
* Review: Expressions: Write, Evaluate, Simplify
* Linear Equations
* Linear Inequalities
* Compound Inequalities
* Absolute Value Equations and Inequalities
* Marking Period 1 Review and Assessment

**Marking Period 2: Linear Equations, Linear Functions, and Systems of Linear Equations**

* Linear Equations: Slope-Intercept Form, Point-Slope Form, Standard Form
* Parallel and Perpendicular Lines
* Relations and Functions
* Linear Functions
* Patterns
* Scatter Plots and Lines of Best Fit
* Analysis of the Lines of Best Fit
* Verification of Solutions of Systems
* Linear Systems: Graphing, Substitution, Elimination
* Mid-Term Review and Assessment

**Marking Period 3: Application of Systems of Linear Equations, Systems of Linear Inequalities, Absolute Value Functions, Exponents and Exponential Functions, and Polynomials**

* Linear Systems: Problem Solving
* Linear Systems: Solutions without Solving
* Linear Inequalities in Two Variables
* Systems of Linear Inequalities
* Absolute Value Functions
* Rules of Exponents – Monomials
* Exponential Functions
* Polynomials: Addition and Subtraction
* Polynomials: Multiplication
* Marking Period 3 Review and Assessment

**Marking Period 4: Factoring Polynomials, Radicals and Solving Quadratic Equations, Data Analysis/Statistics, and Algebra Keystones**

* Factorization of Polynomials
* Simplification of Rational Expressions
* Quadratic Equations: Solve by Using Graphs and Tables
* Quadratic Equations: Solve by Factoring
* Radical Expressions
* Quadratic Equations: Solve by Square Root Property
* Data Displays: Presentations, Analysis, Comparison
* Interpretation of Shapes of Data Displays
* Standard Deviation
* Two-Way Frequency Tables
* Algebra Keystone Prep and Exam
* Final Exam Review and Assessment

**Standards/Eligible Content and Skills**

| **Performance Indicator** | **PA Core Standard and/or Eligible Content** | **Marking Period Taught**  |
| --- | --- | --- |
| Compute the theoretical and experimental probability of a single event to model real-world or mathematical problems | A1.2.3.3M07.D-S.3.2.2 | MP1 |
| Find probabilities for compound events to model real-world and mathematical problems (e.g., find probability of red and blue, find probability of red or blue) | A1.2.3.3.1 | MP1 |
| Represent probability as a fraction, decimal, and/or percent | A1.2.3.3.1 | MP1 |
| Compare and order real numbers | A1.1.1.1.1 | MP1 |
| Find and estimate square roots | A1.1.1.1.2A1.1.1.4.1 | MP1 |
| Perform operations of real numbers: Sums, Differences, Products, Quotients | CC.2.1.HS.F.2 | MP1 |
| Write algebraic expressions to model word phrases | CC.2.2.HS.D.2 | MP1 |
| Evaluate expressions | CC.2.2.HS.D.2 | MP1 |
| Simplify expressions | CC.2.2.HS.D.2 | MP1 |
| Solve multi-step equations in one variable | A1.1.2.1.1 | MP1 |
| Use equations to solve consecutive integer problems | A1.1.1.1.1A1.1.2.1.1A1.1.2.1.3 | MP1 |
| Solve equations with the variable on both sides(Include proportions) | A1.1.2.1.1 | MP1 |
| Understand equations with infinitely many or no solutions | A1.1.2.1.1A1.1.2.1.3 | MP1 |
| Write and solve equations to model real-world and mathematical problems | A1.1.1.4.1A1.1.2.1.1A1.1.2.1.3 | MP1 |
| Use multi-step equations to solve distance-rate-time real-world and mathematical problems | A1.1.1.4.1A1.1.2.1.1A1.1.2.1.3 | MP1 |
| Construct a proof to justify a solution method for equations. | A1.1.2.1.1A1.1.2.1.2CC.2.2.HS.D.9 | MP1 |
| Write and graph inequalities | A1.1.3.1.1A1.1.3.1.2 | MP1 |
| Solve multi-step inequalities | A1.1.3.1.1A1.1.3.1.2 | MP1 |
| Solve inequalities with variables on both sides | A1.1.3.1.1A1.1.3.1.2 | MP1 |
| Understand inequalities with infinitely many or no solutions | A1.1.3.1.1A1.1.3.1.3 | MP1 |
| Write and solve inequalities to model real-world and mathematical problems | A1.1.1.4.1A1.1.3.1.1A1.1.3.1.2A1.1.3.1.3 | MP1 |
| Construct a proof to justify a solution method for inequalities. | A1.1.2.1.2A1.1.3.1.1CC.2.2.HS.D.9 | MP1 |
| Understand compound inequalities | A1.1.3.1.1A1.1.3.1.2A1.1.3.1.3 | MP1 |
| Solve a compound inequality using “OR” | A1.1.3.1.1A1.1.3.1.2A1.1.3.1.3 | MP1 |
| Solve a compound inequality using “AND” | A1.1.3.1.1A1.1.3.1.2A1.1.3.1.3 | MP1 |
| Use compound inequalities to model and solve real-world and mathematical problems | A1.1.1.4.1A1.1.3.1.1A1.1.3.1.2A1.1.3.1.3 | MP1 |
| Understand and solve absolute value equations | A1.1.2.1.1A1.1.2.1.2 | MP1 |
| Apply absolute value equations to model and solve real-world and mathematical problems | A1.1.1.4.1A1.1.2.1.1A1.1.2.1.3 | MP1 |
| Understand and solve absolute value inequalities | A1.1.3.1.1A1.1.3.1.2 | MP1 |
| Apply absolute value inequalities to model and solve real-world and mathematical problems | A1.1.1.4.1A1.1.3.1.1A1.1.3.1.2A1.1.3.1.3 | MP1 |
| **Marking Period 1 Review and Assessment** |  | MP1 |
| * Review and extend knowledge of Probability
 |  | MP1 |
| * Review and extend knowledge of Solving Equations and Inequalities
 |  | MP1 |
| Identify patterns and equations that represent linear and non-linear functions | A1.2.1.1.1A1.2.1.2.1 | MP2 |
| Use tables to graph equations of linear and non-linear functions | A1.2.1.1.1A1.2.1.2.1 | MP2 |
| Calculate the slope of a linear relationship | A1.2.2.1.1 | MP2 |
| Graph linear equations in slope-intercept form | A1.1.2.1A1.2.1.1A1.2.1.2.1CC.2.2.HS.D.8CC.2.2.HS.D.10 | MP2 |
| Write a linear equation from a graph | A1.1.2.1.1A1.2.2.1.3A1.2.2.1.4 | MP2 |
| Write linear equations in slope-intercept form | A1.1.2.1.1A1.2.1.2.1A1.2.1.2.2A1.2.2.1.3 | MP2 |
| Write linear equations in slope-intercept form to model real-world and mathematical problems | A1.1.1.4.1A1.1.2.1.1A1.2.1.2.1A1.2.1.2.2A1.2.2.1.3 | MP2 |
| Interpret the slope and y-intercept of linear equations that models real-world and mathematical problems | A1.1.1.4.1A1.1.2.1.1A1.2.1.2.1A1.2.1.2.2CC.2.2.HS.C.6 | MP2 |
| Write linear equations in point-slope form | A1.1.2.1.1A1.2.1.2.1A1.2.1.2.2A1.2.2.1.3 | MP2 |
| Graph linear equations in point-slope form | A1.1.2.1A1.2.1.1A1.2.1.2.1CC.2.2.HS.D.8CC.2.2.HS.D.10 | MP2 |
| Write linear equations in point-slope form to model real-world and mathematical problems | A1.1.1.4.1A1.1.2.1.1A1.1.2.1.3A1.2.1.2.1A1.2.2.1.1A1.2.2.1.2A1.2.2.1.3 | MP2 |
| Transform equations from point-slope to slope-intercept form | A1.2.1.2.2CC.2.2.HS.C.2 | MP2 |
| Compare slope-intercept form to standard form | A1.1.2.1.1A1.1.2.1.2A1.1.2.1.3CC.2.2.HS.C.2CC.2.2.HS.C.5 | MP2 |
| Graph an equation in standard form by using intercepts | A1.1.2.1A1.2.1.1A1.2.1.2.1CC.2.2.HS.D.8CC.2.2.H.S.D.10 | MP2 |
| Relate standard form to horizontal and vertical lines | CC.2.2.HS.C.2CC.2.2.HS.C.5 | MP2 |
| Write linear equations in standard form to model real-world and mathematical problems | A1.1.1.4.1A1.1.2.1.1A1.1.2.1.2A1.1.2.1.3A1.2.1.2.1A1.2.2.1.2A1.2.2.1.3 | MP2 |
| Transform equations in standard form to slope-intercept form | A1.1.2.1.1A1.1.2.1.2A1.2.1.2.2CC.2.2.HS.C.2 | MP2 |
| Determine whether lines are parallel, perpendicular, or neither | A1.2.1.2.1CC.2.1.HS.F.3CC.2.2.HS.D.7 | MP2 |
| Write equations for parallel and/or perpendicular lines | A1.1.2.1.1A1.1.2.1.2A1.1.2.1.3A1.2.1.2.1A1.2.2.1.3CC.2.2.HS.C.2CC.2.2.HS.D.7 | MP2 |
| Identify the domain and range of relations/functions | A1.2.1.1.3 | MP2 |
| Analyze and identify reasonable domains and ranges for real-world and mathematical problems | A1.2.1.1.2A1.2.1.1.3 | MP2 |
| Classify domains as discrete or continuous | A1.2.1.1.3 | MP2 |
| Classify relations as functions; identify functions as one-to-one or not as one-to-one | A1.2.1.1.2A1.2.1.1.3 | MP2 |
| Identify constraints on a domain | A1.2.1.1.2A1.2.1.1.3 | MP2 |
| Evaluate functions in function notation | A1.1.2.1.1A1.2.1.2.1A1.2.1.2.2CC.2.2.HS.C.1 | MP2 |
| Write a linear function rule | A1.1.2.1.1A1.2.1.2.1A1.2.1.2.2CC.2.2.HS.C.1CC.2.2.HS.C.3 | MP2 |
| Analyze a linear function | A1.1.2.1.1A1.1.2.1.3A1.2.1.2.1A1.2.1.2.2CC.2.2.HS.C.1CC.2.2.HS.C.3 | MP2 |
| Write linear functions to model and solve real-world and mathematical problems | A1.1.1.4.1A1.1.2.1.1A1.1.2.1.3CC.2.2.HS.C.1CC.2.2.HS.C.3 | MP2 |
| Identify patterns within a set of data/sequence | A1.2.1.1.1 | MP2 |
| Write a linear formula to represent patterns/sequences | A1.1.2.1.1A1.2.1.1.1 | MP2 |
| Represent a pattern graphically | A1.2.1.1.1 | MP2 |
| Describe the type of association displayed in scatter plots: Positive, Negative | A1.2.1.1.1A1.2.1.2.1A1.2.3.2.2A1.2.3.2.3CC.2.2.HS.C.6 | MP2 |
| Identify the correlation shown in a scatter plot: Positive, Negative, None | A1.2.1.1.1A1.2.1.2.1A1.2.3.2.2A1.2.3.2.3CC.2.2.HS.C.6 | MP2 |
| Write the equation of a trend line/line of best fit for a scatterplot | A1.2.2.2.1 | MP2 |
| Interpret and make predictions with data using the graph and equation for a trend line/line of best fit | A1.1.1.4.1A1.1.2.1.3A1.2.1.2.1A1.2.3.2.2A1.2.3.2.3CC.2.2.HS.C.1 | MP2 |
| Verify solutions to systems of linear equations | A1.1.2.2.2CC.2.2.HS.D.10 | MP2 |
| Solve systems of linear equations by graphing | A1.1.2.2.1A1.1.2.2.2 | MP2 |
| Solve systems of linear equations by substitution | A1.1.2.2.1A1.1.2.2.2 | MP2 |
| Solve system of linear equations by elimination | A1.1.2.2.1A1.1.2.2.2 | MP2 |
| Identify systems with infinitely more or no solutions using any method: Graphing, Substitution, Elimination | A1.1.2.2.1A1.1.2.2.2A1.1.1.4.1 | MP2 |
| **Mid-Term Review and Assessment** |  | MP2 |
| * Review and extend knowledge of Probability
 |  | MP2 |
| * Review and extend knowledge of Solving Equations and Inequalities
 |  | MP2 |
| * Review and extend knowledge of Linear Equations
 |  | MP2 |
| * Review and extend knowledge of Linear Functions
 |  | MP2 |
| * Review and extend knowledge of Systems of Linear Equations
 |  | MP2 |
| Write systems of linear equations to model and solve real-world and mathematical problems | A1.1.1.4.1A1.1.2.2.1A1.1.2.2.2 | MP3 |
| Write systems of linear equations to model and solve wind problems | A1.1.1.4.1A1.1.2.2.1A1.1.2.2.2 | MP3 |
| Write systems of linear equations to model and solve water current problems | A1.1.1.4.1A1.1.2.2.1A1.1.2.2.2 | MP3 |
| Determine the number of solutions to a system of linear equations without solving | A1.1.1.4.1A1.2.2.1.1CC.2.2.HS.C.2CC.2.2.HS.D.9 | MP3 |
| Graph a linear inequality in two variables | A1.1.3.2.1A1.2.2.1.1 | MP3 |
| Write a two-variable inequality to model a graph | A1.1.3.2.1A1.2.2.1.1 | MP3 |
| Write and graph linear inequalities in two variables to model real-world and mathematical problems | A1.1.1.4.1A1.1.3.2.1A1.1.3.2.2A1.2.2.1.1 | MP3 |
| Graph a system of linear inequalities in two variables | A1.1.3.2.1A1.2.2.1.1CC.2.2.HS.D.7 | MP3 |
| Write a system of linear inequalities in two variables to model a graph | A1.1.3.2.1A1.2.2.1.1CC.2.2.HS.D.7 | MP3 |
| Write a system of linear inequalities to model real-world and mathematical problems | A1.1.3.2.1A1.2.2.1.1CC.2.2.HS.D.7 | MP3 |
| Graph an absolute value function | A1.1.3.1.1A1.2.1.2.1A1.2.1.2.2A1.2.2.1.1 | MP3 |
| Transform the graph of an absolute value function | A1.1.3.1.1A1.2.1.2.1A1.2.1.2.2A1.2.2.1.1 | MP3 |
| Interpret the graph of an absolute value function that models real-world and mathematical situations | A1.1.1.4.1A1.1.3.1.1A1.2.1.2.1A1.2.1.2.2A1.2.2.1.1 | MP3 |
| Simplify monomial expressions by using the rules of exponents | A1.1.1.1A1.1.1.3.1CC.2.1.HS.F.1 | MP3 |
| Use exponents to solve real-world and mathematical problems | A1.1.1.3.1CC.2.1.HS.F.1 | MP3 |
| Identify exponential functions | A1.2.1.1.1CC.2.2.HS.C.1CC.2.2.HS.C.2 | MP3 |
| Evaluate and graph exponential functions | A1.1.1.3.1A1.2.1.1.1 | MP3 |
| Write exponential functions | A1.1.1.3.1A1.2.1.1.1 | MP3 |
| Compare linear and exponential functions | A1.2.1.1CC.2.2.HS.C.2 | MP3 |
| Classify polynomials by their degree and number of terms | CC.2.2.HS.D.1 | MP3 |
| Write polynomials in standard form | CC.2.2.HS.D.1 | MP3 |
| Add and subtract polynomials | A1.1.1.5.1CC.2.2.HS.D.3 | MP3 |
| Multiply polynomials (No larger than the product of a binomial and trinomial) | A1.1.1.5.1CC.2.2.HS.D.3 | MP3 |
| Determine the square of a binomial | A1.1.1.5.1CC.2.2.HS.D.3 | MP3 |
| Find the product of a sum and difference | A1.1.1.5.1CC.2.2.HS.D.3 | MP3 |
| **Marking Period 3 Review and Assessment**  |  | MP3 |
| * Review and extend knowledge of the Application of Systems of Equations
 |  | MP3 |
| * Review and extend knowledge of Systems of Linear Inequalities
 |  | MP3 |
| * Review and extend knowledge of Absolute Value Functions
 |  | MP3 |
| * Review and extend knowledge of Exponents and Exponential Functions
 |  | MP3 |
| * Review and extend knowledge of Polynomials
 |  | MP3 |
| Factor polynomials using the Greatest Common Factor (GCF) | A1.1.1.2.1A1.1.1.5.2 | MP4 |
| Factor trinomials in the form: ax2 + bx + c, where a = 1  | A1.1.1.2.1A1.1.1.5.2 | MP4 |
| Factor trinomials in the form: ax2 + bx + c (Leading coefficient is always the GCF) | A1.1.1.2.1A1.1.1.5.2 | MP4 |
| Factor trinomials in the form: ax2 + bx + c, where a ≠ 0 (introduced, not mastered) | A1.1.1.2.1A1.1.1.5.2 | MP4 |
| Factor polynomials by grouping | A1.1.1.2.1A1.1.1.5.2 | MP4 |
| Factor special-case polynomials: Difference of Squares, Perfect Square Trinomials | A1.1.1.2.1A1.1.1.5.2 | MP4 |
| Factor polynomials completely | A1.1.1.2.1A1.1.1.5.2 | MP4 |
| Use polynomials and their operations to model and solve real-world and mathematical problems | A1.1.1.2.1A1.1.1.5.1A1.1.1.5.2 | MP4 |
| Identify solutions of quadratic equations when provided with a graph or table | CC.2.2.HS.D.9CC.2.2.HS.D.10 | MP4 |
| Solve quadratic equations by factoring using the Zero-Product Property (Introduced, not mastered) | A1.1.1.5.2A2.1.3.1.1 | MP4 |
| Simplify rational expressions (Factorable polynomial divided by a factorable polynomial) | A1.1.1.5.3CC.2.2.HS.D.6 | MP4 |
| Simplify radical expressions using the Product Property of Square Roots (Numbers only, no variable expressions) | A1.1.1.3.1 | MP4 |
| Simplify products and quotients of radical expressions (No rationalizing necessary) | A1.1.1.3.1 | MP4 |
| Solve quadratic equations by the Square Root Property | A1.1.1.3.1A2.1.3.1.1 | MP4 |
| Use quadratic equations to model and solve real-world and mathematical problems in terms of area and consecutive numbers | A1.1.1.4.1A1.1.1.5.1A1.1.1.5.2A2.1.3.1.1CC.2.2.HS.D.5 | MP4 |
| Find and make conclusions about the measures of central tendency | A1.2.3.2.1A1.2.3.2.2CC.2.4.HS.B.1 | MP4 |
| Represent and interpret data using various representations: Dot Plot, Histogram, Box-and-Whisker Plot | A1.2.3.1.1A1.2.3.2.1A1.2.3.2.2CC.2.4.HS.B.1 | MP4 |
| Compare data sets that are displayed with the same representations: Dot Plot, Histogram, Box-and-Whisker Plot | A1.2.3.1.1A1.2.3.2.2CC.2.4.HS.B.1CC.2.4.HS.B.3 | MP4 |
| Interpret and compare shapes of distributions | A1.2.3.1.1A1.2.3.2.1A1.2.3.2.2CC.2.4.HS.B.1CC.2.4.HS.B.3 | MP4 |
| Compute and interpret the standard deviation of a data set | A1.2.3.2.1A1.2.3.2.2CC.2.4.HS.B.1 | MP4 |
| Compare data sets using the standard deviation | A1.2.3.2.1A1.2.3.2.2CC.2.4.HS.B.1 | MP4 |
| Create and interpret data using a two-way frequency table | A1.2.3.2.1A1.2.3.2.2CC.2.4.HS.B.2 | MP4 |
| **Algebra Keystone Prep and Exam** |  | MP4 |
| * Review knowledge of Operations with Real Numbers and Expressions, Linear Equations, Linear Inequalities,

Functions, Coordinate Geometry, Data Analysis, and Probability |  | MP4 |
| **Final Exam Review and Assessment** |  | MP4 |
| * Review and extend knowledge of the Application of Systems of Linear Equations
 |  | MP4 |
| * Review and extend knowledge of Systems of Linear Inequalities
 |  | MP4 |
| * Review and extend knowledge of Absolute Value Functions
 |  | MP4 |
| * Review and extend knowledge of Exponents and Exponential Functions
 |  | MP4 |
| * Review and extend knowledge of Polynomials and Factoring
 |  | MP4 |
| * Review and extend knowledge of Radicals and Solving Quadratic Equations
 |  | MP4 |
| * Review and extend knowledge of Data Analysis/Statistics
 |  | MP4 |

**ASSESSMENTS**

**PDE Academic Standards, Assessment Anchors, and Eligible Content:** The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

**Formative Assessments:** The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

**Effective formative assessments for this course include:
Suggested but not limited to:**

* Pre-assessments of prior knowledge (e.g., Entrance cards or KWL chart)
* Bellringers/Problems of the Day (PODs)
* Discussions
* Exit ticket
* Teacher observations/Questioning
* Graphic organizers (e.g., Venn Diagrams, word mapping, webbing, KWL chart, etc.)
* Outlining
* Cooperative learning
* Written work
* Quizzes
* Oral response
* Self-evaluation
* Homework
* Summarizing
* Note-taking

**Summative Assessments:** The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

**Effective summative assessments for this course include:
Suggested but not limited to:**

* Performance assessment
* Chapter/unit tests
* Quizzes
* Marking period assessments
* Mid-term exam
* Final exam
* Projects
* Student presentations