WARREN COUNTY SCHOOL DISTRICT

PLANNED INSTRUCTION

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
Certification verified by the WCSD Human Resources Department: ☒Yes ☐No

WCSD STUDENT DATA SYSTEM INFORMATION

Course Level: Academic
Mark Types: Check all that apply.
☒F – Final Average ☒MP – Marking Period ☒EXM – Final Exam

GPA Type: ☐ GPAEL-GPA Elementary ☐ GPAML-GPA for Middle Level ☒ NHS-National Honor Society
☒ UGPA-Non-Weighted Grade Point Average ☒ GPA-Weighted Grade Point Average

State Course Code: 02052
To find the State Course Code, go to State Course Code, 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	A1.2.3.3 M07.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	A1.1.1.1.2 A1.1.1.4.1	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	A1.1.1.1.1 A1.1.2.1.1 A1.1.2.1.3	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	A1.1.2.1.1 A1.1.2.1.3	MP1
Write and solve equations to model real-world and mathematical problems	A1.1.1.4.1 A1.1.2.1.1 A1.1.2.1.3	MP1
Use multi-step equations to solve distance-rate-time real-world and mathematical problems	A1.1.1.4.1 A1.1.2.1.1 A1.1.2.1.3	MP1
Construct a proof to justify a solution method for equations.	A1.1.2.1.1 A1.1.2.1.2 CC.2.2.HS.D.9	MP1
Write and graph inequalities	A1.1.3.1.1 A1.1.3.1.2	MP1
Solve multi-step inequalities	A1.1.3.1.1 A1.1.3.1.2	MP1
Solve inequalities with variables on both sides	A1.1.3.1.1 A1.1.3.1.2	MP1
Understand inequalities with infinitely many or no solutions	A1.1.3.1.1 A1.1.3.1.3	MP1

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
Write and solve inequalities to model real-world and mathematical problems	A1.1.1.4.1 A1.1.3.1.1 A1.1.3.1.2 A1.1.3.1.3	MP1
Construct a proof to justify a solution method for inequalities.	A1.1.2.1.2 A1.1.3.1.1 CC.2.2.HS.D.9	MP1
Understand compound inequalities	A1.1.3.1.1 A1.1.3.1.2 A1.1.3.1.3	MP1
Solve a compound inequality using “OR”	A1.1.3.1.1 A1.1.3.1.2 A1.1.3.1.3	MP1
Solve a compound inequality using “AND”	A1.1.3.1.1 A1.1.3.1.2 A1.1.3.1.3	MP1
Use compound inequalities to model and solve real-world and mathematical problems	A1.1.1.4.1 A1.1.3.1.1 A1.1.3.1.2 A1.1.3.1.3	MP1
Understand and solve absolute value equations	A1.1.2.1.1 A1.1.2.1.2	MP1
Apply absolute value equations to model and solve real-world and mathematical problems	A1.1.1.4.1 A1.1.2.1.1 A1.1.2.1.3	MP1
Understand and solve absolute value inequalities	A1.1.3.1.1 A1.1.3.1.2	MP1
Apply absolute value inequalities to model and solve real-world and mathematical problems	A1.1.1.4.1 A1.1.3.1.1 A1.1.3.1.2 A1.1.3.1.3	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	A1.2.1.1.1 A1.2.1.2.1	MP2
Use tables to graph equations of linear and non-linear functions	A1.2.1.1.1 A1.2.1.2.1	MP2
Calculate the slope of a linear relationship	A1.2.2.1.1	MP2
Graph linear equations in slope-intercept form	A1.1.2.1 A1.2.1.1 A1.2.1.2.1 CC.2.2.HS.D.8 CC.2.2.HS.D.10	MP2

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
Write a linear equation from a graph	A1.1.2.1.1 A1.2.2.1.3 A1.2.2.1.4	MP2
Write linear equations in slope-intercept form	A1.1.2.1.1 A1.2.1.2.1 A1.2.1.2.2 A1.2.2.1.3	MP2
Write linear equations in slope-intercept form to model real-world and mathematical problems	A1.1.1.4.1 A1.1.2.1.1 A1.2.1.2.1 A1.2.1.2.2 A1.2.2.1.3	MP2
Interpret the slope and y-intercept of linear equations that models real-world and mathematical problems	A1.1.1.4.1 A1.1.2.1.1 A1.2.1.2.1 A1.2.1.2.2 CC.2.2.HS.C.6	MP2
Write linear equations in point-slope form	A1.1.2.1.1 A1.2.1.2.1 A1.2.1.2.2 A1.2.2.1.3	MP2
Graph linear equations in point-slope form	A1.1.2.1 A1.2.1.1 A1.2.1.2.1 CC.2.2.HS.D.8 CC.2.2.HS.D.10	MP2
Write linear equations in point-slope form to model real-world and mathematical problems	A1.1.1.4.1 A1.1.2.1.1 A1.1.2.1.3 A1.2.1.2.1 A1.2.2.1.1 A1.2.2.1.2 A1.2.2.1.3	MP2
Transform equations from point-slope to slope-intercept form	A1.2.1.2.2 CC.2.2.HS.C.2	MP2
Compare slope-intercept form to standard form	A1.1.2.1.1 A1.1.2.1.2 A1.1.2.1.3 CC.2.2.HS.C.2 CC.2.2.HS.C.5	MP2
Graph an equation in standard form by using intercepts	A1.1.2.1 A1.2.1.1 A1.2.1.2.1 CC.2.2.HS.D.8 CC.2.2.H.S.D.10	MP2
Relate standard form to horizontal and vertical lines	CC.2.2.HS.C.2 CC.2.2.HS.C.5	MP2

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
Write linear equations in standard form to model real-world and mathematical problems	A1.1.1.4.1 A1.1.2.1.1 A1.1.2.1.2 A1.1.2.1.3 A1.2.1.2.1 A1.2.2.1.2 A1.2.2.1.3	MP2
Transform equations in standard form to slope-intercept form	A1.1.2.1.1 A1.1.2.1.2 A1.2.1.2.2 CC.2.2.HS.C.2	MP2
Determine whether lines are parallel, perpendicular, or neither	A1.2.1.2.1 CC.2.1.HS.F.3 CC.2.2.HS.D.7	MP2
Write equations for parallel and/or perpendicular lines	A1.1.2.1.1 A1.1.2.1.2 A1.1.2.1.3 A1.2.1.2.1 A1.2.2.1.3 CC.2.2.HS.C.2 CC.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	A1.2.1.1.2 A1.2.1.1.3	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	A1.2.1.1.2 A1.2.1.1.3	MP2
Identify constraints on a domain	A1.2.1.1.2 A1.2.1.1.3	MP2
Evaluate functions in function notation	A1.1.2.1.1 A1.2.1.2.1 A1.2.1.2.2 CC.2.2.HS.C.1	MP2
Write a linear function rule	A1.1.2.1.1 A1.2.1.2.1 A1.2.1.2.2 CC.2.2.HS.C.1 CC.2.2.HS.C.3	MP2
Analyze a linear function	A1.1.2.1.1 A1.1.2.1.3 A1.2.1.2.1 A1.2.1.2.2 CC.2.2.HS.C.1 CC.2.2.HS.C.3	MP2

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
Write linear functions to model and solve real-world and mathematical problems	A1.1.1.4.1 A1.1.2.1.1 A1.1.2.1.3 CC.2.2.HS.C.1 CC.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	A1.1.2.1.1 A1.2.1.1.1	MP2
Represent a pattern graphically	A1.2.1.1.1	MP2
Describe the type of association displayed in scatter plots: Positive, Negative	A1.2.1.1.1 A1.2.1.2.1 A1.2.3.2.2 A1.2.3.2.3 CC.2.2.HS.C.6	MP2
Identify the correlation shown in a scatter plot: Positive, Negative, None	A1.2.1.1.1 A1.2.1.2.1 A1.2.3.2.2 A1.2.3.2.3 CC.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	A1.1.1.4.1 A1.1.2.1.3 A1.2.1.2.1 A1.2.3.2.2 A1.2.3.2.3 CC.2.2.HS.C.1	MP2
Verify solutions to systems of linear equations	A1.1.2.2.2 CC.2.2.HS.D.10	MP2
Solve systems of linear equations by graphing	A1.1.2.2.1 A1.1.2.2.2	MP2
Solve systems of linear equations by substitution	A1.1.2.2.1 A1.1.2.2.2	MP2
Solve system of linear equations by elimination	A1.1.2.2.1 A1.1.2.2.2	MP2
Identify systems with infinitely more or no solutions using any method: Graphing, Substitution, Elimination	A1.1.2.2.1 A1.1.2.2.2 A1.1.1.4.1	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

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
• 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	A1.1.1.4.1 A1.1.2.2.1 A1.1.2.2.2	MP3
Write systems of linear equations to model and solve wind problems	A1.1.1.4.1 A1.1.2.2.1 A1.1.2.2.2	MP3
Write systems of linear equations to model and solve water current problems	A1.1.1.4.1 A1.1.2.2.1 A1.1.2.2.2	MP3
Determine the number of solutions to a system of linear equations without solving	A1.1.1.4.1 A1.2.2.1.1 CC.2.2.HS.C.2 CC.2.2.HS.D.9	MP3
Graph a linear inequality in two variables	A1.1.3.2.1 A1.2.2.1.1	MP3
Write a two-variable inequality to model a graph	A1.1.3.2.1 A1.2.2.1.1	MP3
Write and graph linear inequalities in two variables to model real-world and mathematical problems	A1.1.1.4.1 A1.1.3.2.1 A1.1.3.2.2 A1.2.2.1.1	MP3
Graph a system of linear inequalities in two variables	A1.1.3.2.1 A1.2.2.1.1 CC.2.2.HS.D.7	MP3
Write a system of linear inequalities in two variables to model a graph	A1.1.3.2.1 A1.2.2.1.1 CC.2.2.HS.D.7	MP3
Write a system of linear inequalities to model real-world and mathematical problems	A1.1.3.2.1 A1.2.2.1.1 CC.2.2.HS.D.7	MP3
Graph an absolute value function	A1.1.3.1.1 A1.2.1.2.1 A1.2.1.2.2 A1.2.2.1.1	MP3
Transform the graph of an absolute value function	A1.1.3.1.1 A1.2.1.2.1 A1.2.1.2.2 A1.2.2.1.1	MP3
Interpret the graph of an absolute value function that models real-world and mathematical situations	A1.1.1.4.1 A1.1.3.1.1 A1.2.1.2.1 A1.2.1.2.2 A1.2.2.1.1	MP3

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
Simplify monomial expressions by using the rules of exponents	A1.1.1.1 A1.1.1.3.1 CC.2.1.HS.F.1	MP3
Use exponents to solve real-world and mathematical problems	A1.1.1.3.1 CC.2.1.HS.F.1	MP3
Identify exponential functions	A1.2.1.1.1 CC.2.2.HS.C.1 CC.2.2.HS.C.2	MP3
Evaluate and graph exponential functions	A1.1.1.3.1 A1.2.1.1.1	MP3
Write exponential functions	A1.1.1.3.1 A1.2.1.1.1	MP3
Compare linear and exponential functions	A1.2.1.1 CC.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	A1.1.1.5.1 CC.2.2.HS.D.3	MP3
Multiply polynomials (No larger than the product of a binomial and trinomial)	A1.1.1.5.1 CC.2.2.HS.D.3	MP3
Determine the square of a binomial	A1.1.1.5.1 CC.2.2.HS.D.3	MP3
Find the product of a sum and difference	A1.1.1.5.1 CC.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)	A1.1.1.2.1 A1.1.1.5.2	MP4
Factor trinomials in the form: $ax^2 + bx + c$, where $a = 1$	A1.1.1.2.1 A1.1.1.5.2	MP4
Factor trinomials in the form: $ax^2 + bx + c$ (Leading coefficient is always the GCF)	A1.1.1.2.1 A1.1.1.5.2	MP4
Factor trinomials in the form: $ax^2 + bx + c$, where $a \neq 0$ (introduced, not mastered)	A1.1.1.2.1 A1.1.1.5.2	MP4

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
Factor polynomials by grouping	A1.1.1.2.1 A1.1.1.5.2	MP4
Factor special-case polynomials: Difference of Squares, Perfect Square Trinomials	A1.1.1.2.1 A1.1.1.5.2	MP4
Factor polynomials completely	A1.1.1.2.1 A1.1.1.5.2	MP4
Use polynomials and their operations to model and solve real-world and mathematical problems	A1.1.1.2.1 A1.1.1.5.1 A1.1.1.5.2	MP4
Identify solutions of quadratic equations when provided with a graph or table	CC.2.2.HS.D.9 CC.2.2.HS.D.10	MP4
Solve quadratic equations by factoring using the Zero-Product Property (Introduced, not mastered)	A1.1.1.5.2 A2.1.3.1.1	MP4
Simplify rational expressions (Factorable polynomial divided by a factorable polynomial)	A1.1.1.5.3 CC.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	A1.1.1.3.1 A2.1.3.1.1	MP4
Use quadratic equations to model and solve real-world and mathematical problems in terms of area and consecutive numbers	A1.1.1.4.1 A1.1.1.5.1 A1.1.1.5.2 A2.1.3.1.1 CC.2.2.HS.D.5	MP4
Find and make conclusions about the measures of central tendency	A1.2.3.2.1 A1.2.3.2.2 CC.2.4.HS.B.1	MP4
Represent and interpret data using various representations: Dot Plot, Histogram, Box-and-Whisker Plot	A1.2.3.1.1 A1.2.3.2.1 A1.2.3.2.2 CC.2.4.HS.B.1	MP4
Compare data sets that are displayed with the same representations: Dot Plot, Histogram, Box-and-Whisker Plot	A1.2.3.1.1 A1.2.3.2.2 CC.2.4.HS.B.1 CC.2.4.HS.B.3	MP4
Interpret and compare shapes of distributions	A1.2.3.1.1 A1.2.3.2.1 A1.2.3.2.2 CC.2.4.HS.B.1 CC.2.4.HS.B.3	MP4
Compute and interpret the standard deviation of a data set	A1.2.3.2.1 A1.2.3.2.2	MP4

Performance Indicator	**PA Core Standard and/or Eligible Content**	**Marking Period Taught**
	CC.2.4.HS.B.1	
Compare data sets using the standard deviation	A1.2.3.2.1 A1.2.3.2.2 CC.2.4.HS.B.1	MP4
Create and interpret data using a two-way frequency table	A1.2.3.2.1 A1.2.3.2.2 CC.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