**COURSE DESCRIPTION**

**Course Title:** Algebra IA

**Course Number:** 00225

**Course Prerequisites:** This course is designed for the student who has completed Pre-Algebra 8 but did not earn higher than 75%.

**Course Description:** Algebra IA is the first of the two-year Algebra course sequence. The recommended high school math sequence to graduate would be successful completion of Algebra IA, Algebra IB, and Geometry. Algebra IA uses practical problems to apply theory and connect algebra to the real world. This course includes a study of numbers and operations, algebraic concepts, equations, inequalities, linear functions, and probability. The Keystone Algebra Exam will be taken after completion of Algebra IB. District marking period assessments 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**: 02053

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, SAS pdesas.org, Brainfuse, IXL,
 Calculator: TI-30XIIS, Online Calculator: Desmos

**Curriculum Document**

**WCSD Board Approval:**

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

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

**Date(s) Revised:**  6/12/2023 **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, Expressions, and Equations**

* Probability: Simple, Compound
* Operations of Real Numbers
* Review: Expressions: Write, Evaluate, Simplify
* Equations: Two-Step, Multi-Step, Variables on Both Sides
* **Marking Period 1 Review and Assessment**

**Marking Period 2: Equations, Inequalities, and Absolute Value**

* Equations: Proportions, Proofs/Justifications
* Inequalities
* Compound Inequalities
* Absolute Value: Equations, Inequalities
* **Marking Period 2 Review and Assessment**

**Marking Period 3: Linear Equations**

* Slope-Intercept Form
* Point-Slope Form
* Standard Form
* Parallel and Perpendicular Lines
* **Marking Period 3 Review and Assessment**

**Marking Period 4: Linear Functions and Polynomials**

* Relations and Functions
* Linear Functions
* Patterns
* Scatter Plots and Lines of Best Fit
* Analysis of the Lines of Best Fit
* Polynomials: Classification and Standard Form
* Polynomials: Addition and Subtraction
* Polynomials: Multiplication (No larger than first degree FOIL of binomials)
* **Marking Period 4 Review and Assessment**

**Standards/Eligible Content and Skills**

| **Performance Indicator** | **PA Core Standard and/or Eligible Content** | **Marking Period Taught**  |
| --- | --- | --- |
| Compute the theoretical probability of a single event to model real-world and mathematical problems | A1.2.3.3M07.D-S.3.2.2 | MP1 |
| Compute the experimental probability of a single event to model real-world and 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 |
| Classify 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 using the order of operations (Include absolute value) | CC.2.2.HS.D.2 | MP1 |
| Simplify expressions by combining like terms | CC.2.2.HS.D.2 | MP1 |
| Simplify expressions by using the Distributive Property | CC.2.2.HS.D.2 | MP1 |
| Verify solutions to equations and inequalities | A1.1.2.1.3A1.1.3.1.3 | MP1 |
| Solve two-step equations in one variable | A1.1.2.1.1 | MP1 |
| Solve multi-step equations in one variable | A1.1.2.1.1 | MP1 |
| Solve equations with variables on both sides  | 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 | A1.1.2.1.1A1.1.2.1.2A1.1.2.1.3 | MP1 |
| **Marking Period 1 Review and Assessment** |  | **MP1** |
| * Review and demonstrate knowledge of Probability
 |  | MP1 |
| * Review and demonstrate knowledge of Expressions
 |  | MP1 |
| * Review and demonstrate knowledge of Equations
 |  | MP1 |
| Solve proportion equations  | A1.1.2.1.1 | MP2 |
| Complete a proof to justify a solution method for equations (Fill in missing statements or reasons) | A1.1.2.1.1A1.1.2.1.3CC.2.2.HS.D.9 | MP2 |
| Write and graph inequalities | A1.1.3.1.1A1.1.3.1.2 | MP2 |
| Identify solutions of inequalities | A1.1.3.1.3 | MP2 |
| Solve two-step inequalities | A1.1.3.1.1A1.1.3.1.2 | MP2 |
| Solve multi-step inequalities | A1.1.3.1.1A1.1.3.1.2 | MP2 |
| Solve inequalities with variables on both sides | A1.1.3.1.1A1.1.3.1.2 | MP2 |
| Understand inequalities with infinitely many or no solutions | A1.1.3.1.1A1.1.3.1.3 | MP2 |
| Write and solve inequalities to model real-world and mathematical problems | A1.1.3.1.1A1.1.3.1.3 | MP2 |
| Complete a proof to justify a solution method for inequalities (Fill in missing statements or reasons) | A1.1.2.1.2A1.1.3.1.1CC.2.2.HS.D.9 | MP2 |
| Understand compound inequalities | A1.1.3.1.1A1.1.3.1.2A1.1.3.1.3 | MP2 |
| Solve a compound inequality involving “OR” | A1.1.3.1.1A1.1.3.1.2A1.1.3.1.3 | MP2 |
| Solve a compound inequality involving “AND” | A1.1.3.1.1A1.1.3.1.2A1.1.3.1.3 | MP2 |
| Understand and solve absolute value equations | A1.1.2.1.1A1.1.2.1.2 | MP2 |
| 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 | MP2 |
| Understand and solve absolute value inequalities | AA.1.3.1.1A1.1.3.1.2 | MP2 |
| 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 | MP2 |
| **Marking Period 2 Review and Assessment** |  | **MP2** |
| * Review and demonstrate knowledge of Equations
 |  | MP2 |
| * Review and demonstrate knowledge of Inequalities
 |  | MP2 |
| * Review and demonstrate knowledge of Absolute Value
 |  | MP2 |
| Identify patterns and equations that represent linear and non-linear functions | A1.2.1.1.1A1.2.1.2.1 | MP3 |
| Use tables to graph equations of linear and non-linear functions | A1.2.1.1.1A1.2.1.2.1 | MP3 |
| Calculate the slope of a linear relationship | A1.2.1.1.1 | MP3 |
| Graph linear equations in slope-intercept form | A1.1.2.1A1.2.1.1.1A1.2.1.2.1CC.2.2.HS.D.8CC.2.2.HS.D.10 | MP3 |
| Write a linear equation from a graph | A1.1.2.1.1A1.2.2.1.3A1.2.2.1.4 | MP3 |
| Write linear equations in slope-intercept form | A1.1.2.1.1A1.2.1.2.1A1.2.1.2.2A1.2.2.1.3 | MP3 |
| 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 | MP3 |
| Interpret the slope and y-intercept of linear equations that model 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 | MP3 |
| Write linear equations in point-slope form | A1.1.2.1.1A1.2.1.2.1A1.2.1.2.2A1.2.2.1.3 | MP3 |
| 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.H.S.D.10 | MP3 |
| 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 | MP3 |
| Transform equations from point-slope to slope-intercept form and vice versa | A1.2.1.2.2CC.2.2.HS.C.2 | MP3 |
| 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.HS.C.5 | MP3 |
| Relate standard form to horizontal and vertical lines | CC.2.2.HS.C.2CC.2.2.HS.C.5 | MP3 |
| 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 | MP3 |
| Transform equations from standard form to slope-intercept form and vice versa | A1.1.2.1.1A1.1.2.1.2A1.2.1.2.2CC.2.2.HS.C.2 | MP3 |
| Determine whether lines are parallel, perpendicular, or neither | A1.2.1.2.1CC.2.1.HS.F.3CC.2.2.HS.D.7 | MP3 |
| Write equations for parallel and 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 | MP3 |
| **Marking Period 3 Review and Assessment** |  | **MP3** |
| * Review and demonstrate knowledge of Linear Equations
 |  | MP3 |
| Identify the domain and range of relations/functions | A1.2.1.1.3 | MP4 |
| Analyze and identify reasonable domains and ranges for real-world and mathematical problems | A1.2.1.1.2A1.2.1.1.3 | MP4 |
| Classify domains as discrete or continuous | A1.2.1.1.3 | MP4 |
| 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 | MP4 |
| Identify constraints on a domain | A1.2.1.1.2A1.2.1.1.3 | MP4 |
| Evaluate functions in function notation | A1.1.2.1.1A1.2.1.2.1A1.2.1.2.2CC.2.2.HS.C.1 | MP4 |
| 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 | MP4 |
| Write linear functions to model and solve real-world and mathematical problems | A1.1.1.4.1A1.1.2.1.1CC.2.2.HS.C.1CC.2.2.HS.C.3 | MP4 |
| Identify patterns within a set of data/sequence | A1.2.1.1.1 | MP4 |
| Write a linear formula to represent patterns/sequences | A1.1.2.1.1A1.2.1.1.1 | MP4 |
| Represent a pattern graphically | A1.2.1.1.1 | MP4 |
| 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 | MP4 |
| 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 | MP4 |
| Write the equation of a trend line/line of best fit for a scatter plot | A1.2.2.2.1 | MP4 |
| Interpret and make predictions with data using the graph and equation of 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 | MP4 |
| Classify polynomials by their degree and number of terms | CC.2.2.HS.D.1 | MP4 |
| Write polynomials in standard form | CC.2.2.HS.D.1 | MP4 |
| Add and subtract polynomials | A1.1.1.5.1CC.2.2.HS.D.3 | MP4 |
| Multiply polynomials (No larger than first degree FOIL of binomials ) | A1.1.1.5.1CC.2.2.HS.D.3 | MP4 |
| **Marking Period 4 Review and Assessment** |  | **MP4** |
| * Review and demonstrate knowledge of Linear Functions
 |  | MP4 |
| * Review and demonstrate knowledge of Polynomials
 |  | 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
* Projects
* Student presentations