

The Correlation of PLATO® instructional curricula to California Academic Content Standards (CACCS)

Mathematics

Algebra I

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PLATO Learning Correlation to the California Academic Content Standards

INTRODUCTION

PLATO Learning, Inc. combines PLATO® computer-assisted instruction into a flexible, integrated learning system to enhance instructional effectiveness in education programs. This document identifies PLATO® instructional activities that correlate to the California Academic Content Standards, Mathematics, Grade 8–12, Algebra 1.

It is recommended that instructors review the correlation in order to fine-tune the activity to fit their educational environment. Modules may be added or removed; web sites and offline activities may also be incorporated to enhance the learning path.

The following PLATO® courseware was used in this alignment:

- PLATO® Algebra 1, Part 1
- PLATO® Algebra 2, Part 1
- PLATO® Geometry and Measurement 1
- PLATO® Quality Fundamentals
- PLATO® Algebra 1, Part 2
- PLATO® Algebra 2, Part 2
- PLATO® Geometry and Measurement 2

PLATO Learning, Inc. looks forward to supporting your initiatives in providing successful educational programs using PLATO® computer-based lessons.

02.0 Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents.

PLATO Algebra 1, Part 1

- Basic Number Ideas
 - Exponents: Product Rule
 - Exponents: Power Rule
 - The Additive Inverse of Integers
 - Square Roots of Imperfect Squares
- Math Sentences
 - Multiplying Monomials
 - Dividing Monomials
 - Linear Equations in 1 Variable:

Isolating the Variable

PLATO Algebra 1, Part 2

- Sets and Numbers
 - Additive Inverse of an Integer
 - Multiplicative Inverse of a Fraction
 - Quotient of Fractions
 - Positive and Negative Exponents
 - Integer Exponents and the Product Rule
 - Integer Exponents and the Quotient Rule

- Integer Exponents and the Power Rule, Part 1

- Integer Exponents and the Power Rule, Part 2

- Review: Fractions and Sets

- Review: Exponents and Radicals

- Polynomials and Factoring

- Additive Inverse of a Monomial

- Monomial Product

- Monomial Quotient

- Additive Inverse of a Binomial

PLATO Algebra 2, Part 2

- Numbers and their Properties

- Rules for Exponents and Radicals

- Rationalizing the Denominator in Rational Expressions

- Applying Rules for Exponents and Radicals

- Exponential and Logarithmic Functions

- Properties of Exponential Functions

03.0 Students solve equations and inequalities involving absolute values.

PLATO Algebra 1, Part 2

- Equations and Inequalities
 - Equations with Absolute Values
 - Solving and Graphing Equations in 1 Variable

- Review: Equations and Inequalities

PLATO Algebra 2, Part 2

- Special Equations and Inequalities

- Graphing with Restrictions on the Variable

04.0 Students simplify expressions before solving linear equations and inequalities in one variable, such as $3(2x-5) + 4(x-2) = 12$.

PLATO Algebra 1, Part 1

- Math Sentences
 - Adding Monomials
 - Subtracting Monomials
 - Adding Binomials and Monomials
 - Subtracting Binomials and Monomials
 - Linear Equations in 1 Variable:
 - Isolating the Variable

PLATO Algebra 1, Part 2

- Polynomials and Factoring
 - Polynomial Sum

- Polynomial Difference

- Simplifying Polynomial Expressions

- Equations and Inequalities

- Simple Equations in 1 Variable:
 - Isolating the Variable

- More Difficult Linear Equations in 1 Variable

- More Difficult Linear Equations in 1 Variable

- Review: Equations and Inequalities

PLATO Algebra 2, Part 2

- Numbers and their Properties

- Simplifying Algebraic Expressions

05.0 Students solve multi-step problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification of each step.

PLATO Algebra 1, Part 1

- Math Sentences
 - Linear Equations in 1 Variable:
 - Isolating the Variable
 - Using Linear Equations to Solve Problems
- Equations and Formulas
 - Literal Equations
- Introduction to Functions
 - Interpreting Graphs to Solve Problems

PLATO Algebra 1, Part 2

- Equations and Inequalities
 - Simple Equations in 1 Variable: Using
- Functions and their Graphs
 - Solving Problems with Linear Functions

- Inspection
- Simple Equations in 1 Variable:
 - Isolating the Variable
- More Difficult Linear Equations in 1 Variable
 - Solving Problems with Linear Equations in 1 Variable
- Linear Inequalities in 1 Variable, Part 3
 - Review: Equations and Inequalities

PLATO Algebra 2, Part 2

- Special Equations and Inequalities
 - Graphing Linear Inequalities in 1 Variable

06.0 Students graph a linear equation and compute the x- and y-intercepts (e.g., graph $2x + 6y = 4$). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by $2x + 6y < 4$).

PLATO Algebra 1, Part 1

- Graphing Basics
 - Graphing Linear Equations in 2 Variables
- Introduction to Functions
 - Graphs, Slopes, and y-Intercepts
 - Equations, Graphs, Slopes, and y-Intercepts

PLATO Algebra 2, Part 1

- Graphs and Linear Equations
 - Graphing a Linear Equation in 2

- Variables
 - Graphing a Linear Inequality in 2 Variables
 - The y-Intercept of a Line
 - Using the Slope and y-Intercept to graph a Line
 - Finding the Slope and y-Intercept from an Equation
 - Identifying Graphs from Their Equations
 - Review: Graphs

07.0 Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations by using the point-slope formula.

PLATO Algebra 1, Part 1

- Math Sentences
 - Determining the Truth Value of a Statement
 - Linear Equations in 1 Variable:
- Solving
 - by Inspection
- Graphing Basics
 - Ordered Pairs as Solutions of Linear Equations
 - Graphing Linear Equations in 2 Variables
- Introduction to Functions
 - Equations, Graphs, Slopes, and y-Intercepts

PLATO Algebra 1, Part 2

- Equations and Inequalities
 - Simple Equations in 1 Variable: Using Inspection
 - Graphing a Solution Set on a Number Line
 - Solving and Graphing Equations in 1 Variable
 - Review: Equations and Inequalities

PLATO Algebra 2, Part 1

- Graphs and Linear Equations
 - Solutions of Linear Equations as Ordered Pairs
 - Finding the Slope and y-Intercept from an Equation
 - Writing Equations in Slope-Intercept Form
 - Identifying Graphs from Their Equations
 - Equations of Parallel or Perpendicular Lines
 - Review: Graphs

PLATO Algebra 2, Part 2

- Coordinates and Curves
 - Point-Slope and Slope-Intercept Forms of Equations
 - Equation of a Line Given a Point and Parallel Line
 - Equation of a Line Given a Point and Perpendicular Line
 - Perpendicular Bisector of a Line Segment

08.0 Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.

PLATO Algebra 2, Part 1

- Graphs and Linear Equations
 - Parallel Lines and Their Slopes
 - Perpendicular Lines and Their Slopes
 - Equations of Parallel or Perpendicular Lines
 - Review: Graphs

PLATO Algebra 2, Part 2

- Coordinates and Curves
 - Equation of a Line Given a Point and

- Parallel Line
 - Equation of a Line Given a Point and Perpendicular Line
 - Perpendicular Bisector of a Line Segment
 - Distance between a Point and a Line

PLATO Geometry and Measurement 2

- Solids and Coordinate Geometry
 - Slope

09.0 Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets.

PLATO Algebra 1, Part 1

- Graphing Basics
- Solving and Graphing Systems of Equations

PLATO Algebra 2, Part 1

- Linear Systems of Equations and Inequalities
- Solving Linear Systems of Equations: Graphs

- Solving Linear Systems of Inequalities: Graphs
- Solving Linear Systems of Equations: Substitution
- Solving Linear Systems of Equations: Addition
- Solving Problems with Linear Systems
- Review: Linear Systems

10.0 Students add, subtract, multiply, and divide monomials and polynomials. Students solve multi-step problems, including word problems, by using these techniques.

PLATO Algebra 1, Part 1

- Math Sentences
- Adding Monomials
- Subtracting Monomials
- Multiplying Monomials
- Dividing Monomials
- Adding Binomials and Monomials
- Subtracting Binomials and Monomials
- Multiplying Binomials and Monomials

PLATO Algebra 1, Part 2

- Polynomials and Factoring
- Monomial Sum
- Monomial Difference
- Monomial Product

- Monomial Quotient
- Binomial Sum
- Additive Inverse of a Binomial
- Binomial Difference
- Polynomial Sum
- Polynomial Difference
- Product of a Monomial and Polynomial
- Simplifying Polynomial Expressions
- Product of Polynomials
- Review: Polynomials and Factoring

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Multiplying Algebraic Expressions

11.0 Students apply factoring techniques to second- and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, recognizing perfect squares of binomials.

PLATO Algebra 1, Part 1

- Math Sentences
- Special Quadratic Equations, Part 2

PLATO Algebra 1, Part 2

- Polynomials and Factoring
- Monomial Factors of Polynomials
- Binomial Factors of Polynomials, Part 1
- Binomial Factors of Polynomials, Part 2
- Factoring the Difference of 2 Squares

- Factoring Perfect Square Trinomials
- Factoring Trinomials, Part 1
- Factoring Trinomials, Part 2
- Review: Polynomials and Factoring

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Factoring Algebraic Expressions
- Factoring Sums and Differences of Perfect Cubes

12.0 Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.

PLATO Algebra 2, Part 1

- Rational Expressions
- Evaluating Rational Expressions
- Equivalent Forms of Rational Expressions

- Simplifying Rational Expressions
- Review: Rational Expressions

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Rational Expressions: Simplify

13.0 Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques.

PLATO Algebra 2, Part 1

- Rational Expressions
- Sum of Rational Expressions, Part 1
- Difference of Rational Expressions, Part 1
- Product of Rational Expressions
- Quotient of Rational Expressions
- Common Denominators of Rational Expressions
- Sum of Rational Expressions, Part 2

- Difference of Rational Expressions, Part 2

- Review: Rational Expressions

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Rational Expressions: Add and Subtract
- Rational Expressions: Multiply and Divide

14.0 Students solve a quadratic equation by factoring or completing the square.

PLATO Algebra 1, Part 1

- Math Sentences
- Special Quadratic Equations, Part 1

PLATO Algebra 1, Part 2

- Equations and Inequalities
- Solving Simple Quadratic Equations
- Solving Quadratic Equations by Factoring, Part 1
- Solving Quadratic Equations by Factoring, Part 2
- Solving Quadratic Equations by

- Factoring, Part 3

- Review: Equations and Inequalities

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Factoring or Using the Quadratic Formula
- Coordinates and Curves
- Distance and Circles
- Parabola and Its Intercepts
- Parabola and Its Vertex

15.0 Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems.

PLATO Algebra 1, Part 1

- Basic Number Ideas
- Using Basic Number Ideas
- Special Topics
- Scaling and Proportion, Part 2

PLATO Algebra 1, Part 2

- Equations and Inequalities
- Solving Problems with Linear Equations in 1 Variable

16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions.

PLATO Algebra 1, Part 1

- Introduction to Functions
- Functions
- Describing Functions with Equations, Tables, and Graphs

PLATO Algebra 2, Part 2

- Functions and their Graphs
- Defining a Function with Its Rule

- Functions and their Graphs
- Finding Values of a Function Using Its Rule
- Functions and their Graphs
- Equations and Graphs of Functions, Part 1
- Domain Values of Composite Functions

17.0 Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression.

PLATO Algebra 1, Part 1

- Math Sentences
- Expressions in 1 Variable
- Introduction to Functions
- Functions

PLATO Algebra 2, Part 2

- Functions and their Graphs
- Defining a Function with Its Rule

- Functions and their Graphs
- Finding Values of a Function Using Its Rule
- Functions and their Graphs
- Domain Values of Composite Functions

18.0 Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion.

PLATO Algebra 1, Part 1

- Introduction to Functions
- Functions

PLATO Algebra 2, Part 2

- Functions and their Graphs
- Defining a Function with Its Rule

- Functions and their Graphs
- Finding Values of a Function Using Its Rule
- Functions and their Graphs
- Equations and Graphs of Functions, Part 1

19.0 Students know the quadratic formula and are familiar with its proof by completing the square.

PLATO Algebra 1, Part 2

- Equations and Inequalities
- Quadratic Formula
- Review: Equations and Inequalities

PLATO Algebra 2, Part 2

- Numbers and their Properties

- Factoring or Using the Quadratic Formula
- Coordinates and Curves
- Parabola and Its Intercepts
- Parabola and Its Vertex

20.0 Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations.

PLATO Algebra 1, Part 2

- Equations and Inequalities
- Quadratic Formula
- Review: Equations and Inequalities

PLATO Algebra 2, Part 2

- Numbers and their Properties

- Factoring or Using the Quadratic Formula
- Coordinates and Curves
- Parabola and Its Intercepts
- Parabola and Its Vertex

21.0 Students graph quadratic functions and know that their roots are the x-intercepts.

PLATO Algebra 1, Part 2

- Equations and Inequalities
- Solving Quadratic Equations by Factoring, Part 2
- Solving Quadratic Equations by Factoring, Part 3
- Quadratic Formula

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Factoring or Using the Quadratic Formula
- Coordinates and Curves
- Parabola and Its Intercepts
- Parabola and Its Vertex
- Functions and their Graphs
- Solving Problems with Quadratic Functions

22.0 Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.

PLATO Algebra 1, Part 2

- Equations and Inequalities
- Solving Simple Quadratic Equations
- Solving Quadratic Equations by Factoring, Part 1
- Solving Quadratic Equations by Factoring, Part 2
- Solving Quadratic Equations by Factoring, Part 3

- Quadratic Formula
- Review: Equations and Inequalities

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Factoring or Using the Quadratic Formula
- Coordinates and Curves
- Parabola and Its Intercepts
- Parabola and Its Vertex

23.0 Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity.

PLATO Algebra 1, Part 1

- Math Sentences
- Using Quadratic Equations to Solve Problems

- Review: Equations and Inequalities

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Factoring or Using the Quadratic Formula
- Functions and their Graphs
- Solving Problems with Quadratic Functions

PLATO Algebra 1, Part 2

- Equations and Inequalities
- Solving Problems with the Quadratic Equations

24.0 Students use and know simple aspects of a logical argument.

24.3 Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.

PLATO Geometry and Measurement 2

- Introduction to Geometry
- Postulates and Theorems

25.0 Students use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements.

25.1 Students use properties of numbers to construct simple, valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Simplifying Algebraic Expressions

PLATO Geometry and Measurement 2

- Introduction to Geometry
- Postulates and Theorems

25.2 Students judge the validity of an argument according to whether the properties of the real number system and the order of operations have been applied correctly at each step.

PLATO Algebra 1, Part 1

- Math Sentences
- Order of Operations
- Expressions in 2 or More Variables

PLATO Algebra 2, Part 2

- Numbers and their Properties
- Simplifying Algebraic Expressions

25.3 Given a specific algebraic statement involving linear, quadratic, or absolute value expressions or equations or inequalities, students determine whether the statement is true sometimes, always, or never.

PLATO Algebra 1, Part 2

- Equations and Inequalities
- Equations with Absolute Values
- Solving and Graphing Equations in 1 Variable

- Review: Equations and Inequalities

PLATO Algebra 2, Part 2

- Special Equations and Inequalities
- Graphing with Restrictions on the Variable