

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

Mathematics

Grade 8–12

Geometry

April 13, 2005

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, Geometry.

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

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

1.0 Students demonstrate understanding by identifying and giving examples of undefined terms, axioms, theorems, and inductive and deductive reasoning.

PLATO Geometry and Measurement 2

- Triangles and Lines
- Congruent Triangles, Part 1
- Transitive Properties of Lines

2.0 Students write geometric proofs, including proofs by contradiction.

PLATO Geometry and Measurement 2

- Introduction to Geometry
- Postulates and Theorems
- Intersecting Lines and Planes
- Congruent Angles
- Supplementary and Complementary Angles
- Two of a Kind
- Triangles and Lines
- Congruent Triangles, Part 1
- Congruent Triangles, Part 2
- Angles in Pairs
- Transitive Properties of Lines
- The Sum of the Angles in a Triangle
- The Pythagorean Theorem 2
- 30-60 Right Triangles
- Proportionality
- Not Everything is Created Equal

- Polygons
- Summing Up Angles
- Parallelograms, Part 1
- Parallelograms, Part 2
- Rhombuses and Trapezoids
- Transformations, Symmetry, and Area
- Symmetry
- Translations
- Rotations
- Area of Right Triangles and Parallelograms
- Area of Any Triangle
- Area of Trapezoids and Rhombuses
- Circles
- Introduction to Circles
- Tangents
- Arcs and Chords
- Inscribed Angles
- Circles and Segments

03.0 Students construct and judge the validity of a logical argument and give counterexamples to disprove a statement.

PLATO Geometry and Measurement 2

- Introduction to Geometry
- Postulates and Theorems

4.0 Students prove basic theorems involving congruence and similarity.

PLATO Geometry and Measurement 1

- Geometry
- Using Geometry

PLATO Geometry and Measurement 2

- Introduction to Geometry
- Postulates and Theorems
- Intersecting Lines and Planes
- Congruent Angles
- Supplementary and Complementary Angles
- Two of a Kind
- Triangles and Lines
- Congruent Triangles, Part 1
- Congruent Triangles, Part 2
- Congruent Triangle Problems
- Angles in Pairs
- Transitive Properties of Lines
- The Sum of the Angles in a Triangle
- The Pythagorean Theorem 2
- 30-60 Right Triangles
- Proportionality

- A Sense of Proportion
- Not Everything is Created Equal
- Polygons
- Summing Up Angles
- Parallelograms, Part 1
- Parallelograms, Part 2
- Rhombuses and Trapezoids
- Transformations, Symmetry, and Area
- Symmetry
- Translations
- Rotations
- Area of Right Triangles and Parallelograms
- Area of Any Triangle
- Area of Trapezoids and Rhombuses
- Circles
- Introduction to Circles
- Tangents
- Arcs and Chords
- Inscribed Angles
- Circles and Segments

5.0 Students prove that triangles are congruent or similar, and they are able to use the concept of corresponding parts of congruent triangles.

PLATO Geometry and Measurement 1

- Geometry
- Using Geometry

PLATO Geometry and Measurement 2

- Triangles and Lines
- Congruent Triangles, Part 1

- Congruent Triangles, Part 2
- Congruent Triangle Problems
- Proportionality
- A Sense of Proportion

6.0 Students know and are able to use the triangle inequality theorem.

PLATO Geometry and Measurement 2

- Triangles and Lines
- Congruent Triangles, Part 2
- Not Everything is Created Equal

7.0 Students prove and use theorems involving the properties of parallel lines cut by a transversal, the properties of quadrilaterals, and the properties of circles.

PLATO Geometry and Measurement 1

- Geometry
- Special Angles, Part 2
- Using Geometry

PLATO Geometry and Measurement 2

- Triangles and Lines
- Angles in Pairs
- Transitive Properties of Lines

- A Sense of Proportion
- Polygons
- Rhombuses and Trapezoids
- Circles
- Introduction to Circles
- Inscribed Angles
- The Length of Arcs

8.0 Students know, derive, and solve problems involving the perimeter, circumference, area, volume, lateral area, and surface area of common geometric figures.

PLATO Geometry and Measurement 1

- Geometry
- Circles/Arcs/Circumferences
- Using Geometry
- Measurement
- Area, Part 1
- Area, Part 2
- Volume
- Using Measurement

PLATO Geometry and Measurement 2

- Transformations, Symmetry, and Area
- Area of Right Triangles and Parallelograms
- Area of Any Triangle
- Area of Trapezoids and Rhombuses
- Circles
- Measuring Circumference
- Solids and Coordinate Geometry
- Area and Volume of Cylinders
- Area and Volume of Cones

9.0 Students compute the volumes and surface areas of prisms, pyramids, cylinders, cones, and spheres; and students commit to memory the formulas for prisms, pyramids, and cylinders

PLATO Geometry and Measurement 1

- Measurement
- Volume
- Using Measurement

PLATO Geometry and Measurement 2

- Solids and Coordinate Geometry
- Area and Volume of Cylinders
- Area and Volume of Cones

10.0 Students compute areas of polygons, including rectangles, scalene triangles, equilateral triangles, rhombi, parallelograms, and trapezoids.

PLATO Geometry and Measurement 1

- Measurement
- Area, Part 1
- Area, Part 2
- Using Measurement

PLATO Geometry and Measurement 2

- Transformations, Symmetry, and Area
- Area of Right Triangles and Parallelograms
- Area of Any Triangle
- Area of Trapezoids and Rhombuses

12.0 Students find and use measures of sides and of interior and exterior angles of triangles and polygons to classify figures and solve problems.

PLATO Geometry and Measurement 1

- Geometry
- The Pythagorean Theorem 1
- Using Geometry

PLATO Geometry and Measurement 2

- Introduction to Geometry
- Points, Lines, and Planes
- Triangles and Lines
- Congruent Triangles, Part 1

- Transitive Properties of Lines
- Polygons
- Introduction to Polygons
- Summing Up Angles
- Angles in Regular Polygons
- Parallelograms, Part 1
- Rhombuses and Trapezoids

13.0 Students prove relationships between angles in polygons by using properties of complementary, supplementary, vertical, and exterior angles.

PLATO Geometry and Measurement 1

- Geometry
- Special Angles, Part 1
- Special Angles, Part 2

PLATO Geometry and Measurement 2

- Introduction to Geometry
- Supplementary and Complementary Angles

- Two of a Kind
- Polygons
- Summing Up Angles
- Angles in Regular Polygons

14.0 Students prove the Pythagorean theorem.

PLATO Algebra 2, Part 2

- Coordinates and Curves (Alg 2.2)
- Distance between 2 Points (Alg 2.2)

PLATO Geometry and Measurement 1

- Geometry
- The Pythagorean Theorem 1
- Using Geometry

PLATO Geometry and Measurement 2

- Triangles and Lines
- The Pythagorean Theorem 2
- Solving Right Triangle Problems
- Solid and Coordinate Geometry
- The Distance Formula

15.0 Students use the Pythagorean theorem to determine distance and find missing lengths of sides of right triangles.

PLATO Algebra 2, Part 2

- Coordinates and Curves (Alg 2.2)
- Distance between 2 Points (Alg 2.2)

PLATO Geometry and Measurement 1

- Geometry
- The Pythagorean Theorem 1
- Using Geometry

PLATO Geometry and Measurement 2

- Triangles and Lines
- The Pythagorean Theorem 2
- Solving Right Triangle Problems
- Solid and Coordinate Geometry
- The Distance Formula

16.0 Students perform basic constructions with a straightedge and compass, such as angle bisectors, perpendicular bisectors, and the line parallel to a given line through a point off the line.

PLATO Geometry and Measurement 2

- Introduction to Geometry
- Congruent Angles

17.0 Students prove theorems by using coordinate geometry, including the midpoint of a line segment, the distance formula, and various forms of equations of lines and circles.

PLATO Algebra 2, Part 2

- Special Equations and Inequalities (Alg 2.2)
- Absolute Value, Inequalities, and Interval Notation (Alg 2.2)
- Coordinates and Curves (Alg 2.2)
- Calculating the Slope of a Line (Alg 2.2)
- Perpendicular Bisector of a Line Segment (Alg 2.2)
- Distance between 2 Points (Alg 2.2)

- Distance between a Point and a Line (Alg 2.2)

PLATO Geometry and Measurement 2

- Solid and Coordinate Geometry
- The Distance Formula
- Solids and Coordinate Geometry
- Slope
- Coordinates in Three Dimensions

18.0 Students know the definitions of the basic trigonometric functions defined by the angles of a right triangle. They also know and are able to use elementary relationships between them. For example, $\tan(x) = \sin(x)/\cos(x)$, $(\sin(x))^2 + (\cos(x))^2 = 1$.

PLATO Trigonometry

- Trigonometric Functions
- Right Angle Trigonometry

- Trigonometric Functions
- Circular Functions
- Trigonometric Identities and Equations
- Trigonometric Identities of Single Variable

19.0 Students use trigonometric functions to solve for an unknown length of a side of a right triangle, given an angle and a length of a side.

PLATO Trigonometry

- Trigonometric Functions
- Right Angle Trigonometry

20.0 Students know and are able to use angle and side relationships in problems with special right triangles, such as 30°, 60°, and 90° triangles and 45°, 45°, and 90° triangles.

PLATO Geometry and Measurement 2

- Triangles and Lines
- The Pythagorean Theorem 2
- Solving Right Triangle Problems
- 30-60 Right Triangles

21.0 Students prove and solve problems regarding relationships among chords, secants, tangents, inscribed angles, and inscribed and circumscribed polygons of circles.

PLATO Geometry and Measurement 1

- Geometry
- Using Geometry

PLATO Geometry and Measurement 2

- Circles
- Introduction to Circles

- Tangents
- Arcs and Chords
- Inscribed Angles
- Circles and Segments
- The Length of Arcs

22.0 Students know the effect of rigid motions on figures in the coordinate plane and space, including rotations, translations, and reflections.

PLATO Geometry and Measurement 2

- Transformations, Symmetry, and Area
- Translations
- Rotations