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

Mathematics

Grade 8–12

Trigonometry

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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, Trigonometry.

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 understand the notion of angle and how to measure it, in both degrees and radians. They can convert between degrees and radians.

PLATO Geometry and Measurement 1
- ·Geometry
  - ·Special Angles, Part 1

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Radian Measure

2.0 Students know the definition of sine and cosine as y- and x-coordinates of points on the unit circle and are familiar with the graphs of the sine and cosine functions.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Circular Functions
- ·Trigonometric Functions
  - ·More Trigonometric Functions
  - ·Graphing Trigonometric Functions

3.0 Students know the identity $\cos^2(x) + \sin^2(x) = 1$.

3.1 Students prove that this identity is equivalent to the Pythagorean theorem (i.e., students can prove this identity by using the Pythagorean theorem and, conversely, they can prove the Pythagorean theorem as a consequence of this identity).

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

PLATO Trigonometry
- ·Trigonometric Identities and Equations
  - ·Trigonometric Identities of Single Variable

3.2 Students prove other trigonometric identities and simplify others by using the identity $\cos^2(x) + \sin^2(x) = 1$. For example, students use this identity to prove that $\sec^2(x) = \tan^2(x) + 1$.

PLATO Trigonometry
- ·Trigonometric Identities and Equations
  - ·Trigonometric Identities of Single Variable

4.0 Students graph functions of the form $f(t) = A \sin(Bt + C)$ or $f(t) = A \cos(Bt + C)$ and interpret A, B, and C in terms of amplitude, frequency, period, and phase shift.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Circular Functions
- ·Trigonometric Functions
  - ·More Trigonometric Functions
  - ·Graphing Trigonometric Functions

5.0 Students know the definition of the tangent and cotangent functions and can graph them.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Circular Functions
- ·Trigonometric Functions
  - ·More Trigonometric Functions
- ·Graphing Trigonometric Functions
- ·Trigonometric Identities and Equations
  - ·Trigonometric Identities of Single Variable

6.0 Students know the definitions of the secant and cosecant functions and can graph them.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Circular Functions
- ·Trigonometric Functions
  - ·More Trigonometric Functions
- ·Graphing Trigonometric Functions
- ·Trigonometric Identities and Equations
  - ·Trigonometric Identities of Single Variable

7.0 Students know that the tangent of the angle that a line makes with the x-axis is equal to the slope of the line.

PLATO Algebra 2, Part 2
- ·Coordinates and Curves (Alg 2.2)
  - ·Calculating the Slope of a Line (Alg 2.2)

PLATO Geometry and Measurement 2
- ·Solids and Coordinate Geometry
  - ·Slope

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Right Angle Trigonometry
- ·Trigonometric Functions
  - ·Circular Functions

8.0 Students know the definitions of the inverse trigonometric functions and can graph the functions.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Inverse Trigonometric Functions: Trigonometry

PLATO Calculus 2
- ·Inverse Trigonometric Functions
  - ·The Arcsine Function
  - ·The Arctangent Function

9.0 Students compute, by hand, the values of the trigonometric functions and the inverse trigonometric functions at various standard points.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Right Angle Trigonometry
- ·Trigonometric Functions
  - ·Circular Functions
- ·Trigonometric Functions
  - ·Inverse Trigonometric Functions: Trigonometry

PLATO Calculus 2
- ·Inverse Trigonometric Functions
  - ·The Arcsine Function
  - ·The Arctangent Function

10.0 Students demonstrate an understanding of the addition formulas for sines and cosines and their proofs and can use those formulas to prove and/or simplify other trigonometric identities.

PLATO Trigonometry
- ·Trigonometric Identities and Equations
  - ·Trigonometric Identities II

11.0 Students demonstrate an understanding of half-angle and double-angle formulas for sines and cosines and can use those formulas to prove and/or simplify other trigonometric identities.

PLATO Trigonometry
- ·Trigonometric Identities and Equations
  - ·Trigonometric Identities II

12.0 Students use trigonometry to determine unknown sides or angles in right triangles.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Right Angle Trigonometry

13.0 Students know the laws of sines and the law of cosines and apply those laws to solve problems.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Laws of Sines and Cosines

14.0 Students determine the area of a triangle, given one angle and the two adjacent sides.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Laws of Sines and Cosines

15.0 Students are familiar with polar coordinates. In particular, they can determine polar coordinates of a point given in rectangular coordinates and vice versa.

PLATO Algebra 2, Part 1
- ·Vectors (Alg 2.1)
  - ·Introduction to Vectors (Alg 2.1)

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Polar Coordinates

16.0 Students represent equations given in rectangular coordinates in terms of polar coordinates.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Polar Coordinates

19.0 Students are adept at using trigonometry in a variety of applications and word problems.

PLATO Trigonometry
- ·Trigonometric Functions
  - ·Right Angle Trigonometry