Trigonometry

The standards below outline the content for a one-semester course in trigonometry. Trigonometry includes the study of trigonometric definitions, applications, graphing, and solving trigonometric equations and inequalities. Emphasis should also be placed on using connections between right triangle ratios, trigonometric functions, and circular functions. In addition, applications and modeling should be included throughout the course of study. Oral and written communication concerning the language of mathematics, logic of procedure, and interpretation of results should also permeate the course.

Graphing utilities (calculators, computers, and other technology tools) will be used to assist in teaching and learning. Graphing utilities facilitate visualizing, analyzing, and understanding algebraic and statistical behaviors and provide a powerful tool for solving and verifying solutions.

Triangular and Circular Trigonometric Functions

T.1   The student, given a point on the terminal side of an angle in standard position, or the value of the trigonometric function of the angle, will determine the sine, cosine, tangent, cotangent, secant, and cosecant of the angle.

T.2   The student will develop and apply the properties of the unit circle in degrees and radians.

Graphs of Trigonometric Functions

T.3   The student, given one of the six trigonometric functions in standard form, will
   a) state the domain and the range of the function;
   b) determine the amplitude, period, phase shift, vertical shift, and asymptotes;
   c) sketch the graph of the function by using transformations for at least a two-period interval; and
   d) investigate the effect of changing the parameters in a trigonometric function on the graph of the function.

T.4   The student will graph the six inverse trigonometric functions.

Equations and Identities

T.5   The student will verify basic trigonometric identities and make substitutions, using the basic identities.

T.6   The student will solve trigonometric equations and inequalities.

T.7   The student will determine the value of any trigonometric function and inverse trigonometric function.

Applications of Trigonometric Functions

T.8   The student will create and solve practical problems involving triangles.

T.9   The student will solve problems, including practical problems, involving
   a) arc length and area of sectors in circles using radians and degrees; and
   b) linear and angular velocity.