Mathematics
Precalculus: B
Unit 1: Trigonometric Functions

Essential Understandings	▪ Trigonometric functions have many applications in the real world.
Essential Questions	▪ What are the different ways of describing angles? ▪ What is a unit circle and explain its relationship to real numbers? ▪ How are trigonometric functions evaluated? ▪ When are fundamental identities used? ▪ How are trigonometric functions graphed? ▪ What are inverse trigonometric functions? ▪ What real-life problems are modeled by trigonometric functions?
Essential Knowledge	▪ One radian is the measure of a central angle that intercepts an arc equal in length to the radius of the circle. ▪ A unit circle is a circle with a radius of one unit. ▪ Trigonometric functions of a unit circle with t as a real number and (x,y) be a point on the unit circle corresponding to t.…sin t=y, cos t =x, tan t=y/x, csc t=1/y, sec t=1/x,cot t=x/y. ▪ The inverse of the sine function is y = arcsin x if and only if sin y = x.
Vocabulary	▪ <u>Terms</u>: ○ Trigonometry, negative angles, central angles, linear speed, angular speed, unit circle, sine, cosecant, cosine, secant, tangent, cotangent, periodic, period, reference angle, amplitude, phase shift, inverse functions, radian, unit circle, co-terminal angles.
Essential Skills	▪ Describe an angle and convert between degree and radian measure. ▪ Identify a unit circle and its relationship to real numbers. ▪ Evaluate trigonometric functions of any angle. ▪ Use fundamental trigonometric identities. ▪ Sketch graphs of trigonometric functions. ▪ Evaluate inverse trigonometric functions. ▪ Use trigonometric functions to model and solve real-life problems. ▪ Change an angle from degree measure to radian measure. ▪ Use the unit circle to evaluate the six trigonometric functions of theta. ▪ Evaluate the six trigonometric functions at any real number. ▪ Evaluate the six trigonometric functions of any angle in radians or degrees. ▪ Sketch the graph of a trigonometric function. ▪ Sketch the graph of an inverse function. ▪ Model trigonometric relationships.

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Related Maine Learning Results	Mathematics C. Geometry Geometric Figures C3. Students understand and use basic ideas of trigonometry. a. Identify and find the value of trigonometric ratios for angles in right triangles. b. Use trigonometry to solve for missing lengths in right triangles. c. Use inverse trigonometric functions to find missing angles in right triangles.
Sample Lessons And Activities	▪ Use the graphing calculator to graph trigonometric functions and to solve real-life problems.
Sample Classroom Assessment Methods	▪ Homework, quiz, rubrics, and chapter exam ▪ Poster project
Sample Resources	▪ Publications: ○ Advanced Mathematical Concepts: Precalculus with Applications ▪ Other Resources: ○ Exploring Geometry with Geometer's Sketchpad - Dan Bennett ○ Geometer's Sketchpad