Unit 01:Trigonometry

Content Area: **Mathematics**
Course(s): **Adv Math/Trig A**
Time Period: **Semester 1**
Length: **2 weeks**
Status: **Published**

Enduring Understandings

Trigonometry is the study of angle measurement, but is primarily algebraic in nature and has practical applications in everyday work and life.

Trigonometry is the study of ratios.

The periodic nature of trigonometric graphs is connected to the unit circle.

The ability to convert between degrees and radians opens the possibility to understand problems from a different perspective.

Standards - NJCCS/CCSS

MA.N-RN	The Real Number System
MA.N-Q.A	Reason quantitatively and use units to solve problems.
MA.G-SRT.C.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.
MA.G-SRT.C.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.
MA.F-TF.A.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
MA.F-TF.A.2	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.
MA.F-TF.A.3	Use special triangles to determine geometrically the values of sine, cosine, tangent for π/3, π/4 and π/6, and use the unit circle to express the values of sine, cosines, and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x is any real number.
9-12.HS-PS4-1	Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.

Essential Questions

Will students be able to recognize and calculate the six trigonometric ratios?

Will students be able to evaluate the trig. functions of quadrantal and special angles?

Will students be able to find angles given the trig. function?

Will students be able to evaluate the six trig. functions and their inverses using the TI-83 graphing calculator and/or Desmos?

Will students be able to utilize calculator technology to solve right triangles and calculate angles of elevation and depression?

Will students be able to convert angles from degrees to radians?

Will students be able to evaluate the six trig. functions and their inverses using radian measurement?

Will students be able to graph y = sinx, y = cosx, y = secx, and y = cscx as well as transformations of these graphs?

Will students be able to anaylize the graphs of y = tanx and y = cotx?

Will students be able to apply the co-function, reciprocal, quotient, negative angle, and pythagorean identites to balance or simplify expressions and equations?

Knowledge and Skills

- Understand angles and their measures.
- Define the six basic trigonometric functions.
- Find the trigonometric functions of special angles in degrees.
- Find angles, given trigonometric functions.
- Find the value of trigonometric functions on a calculator.
- Solve right triangle problems.
- Understand radian measure.
- Find the trigonometric functions of special angles in radians.

Transfer Goals

Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking.

Connecting equations to graphs.

Resources

Precalculus: Graphical, Numerical, Algebraic 10th Edition

Desmos/Amplify

Problem-Attic

Deltamath

Geogebra