Unit 3: Trigonometry

Content Area: **Mathematics**
Course(s): **Generic Course**
Time Period: **Semester 2**
Length: **5 weeks**
Status: **Published**

Standards

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.7	Explain and use the relationship between the sine and cosine of complementary 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.
MA.F-TF.B.7	Use inverse functions to solve trigonometric equations that arise in modeling contexts; evaluate the solutions using technology, and interpret them in terms of the context.

Enduring Understandings

There are various real-life applications where the use of the Pythagorean Theorem along with trigonometric ratios can help us solve for missing information.

Trig functions are derived from ratios of the sides of right triangles in relation to a given acute angle.

Essential Questions

From where are the six trig functions derived?

How can trigonometry be used to solve problems in the physical world?

How can the ratios of the sides in special right triangles help us solve trigonometry problems in different contexts?

Knowledge and Skills

- use the Pythagorean Theorem along with trigonometric functions and inverse trigonometric functions to find missing sides of right triangles.
- use the ratios of the sides of special right triangles to find missing sides of the special triangles.
- do trigonometry on calculators to find missing sides and angles of right triangles.
- apply trigonometry to word problems involving angles of elevation and depression.
- draw and use the coordinates of special right triangles in the coordinate plane to find missing sides of triangles.
- evaluate trigonometric functions of quadrantal angles.
- apply signs of trigonometric functions in the coordinate plane to draw triangles and find missing sides.
- evaluate sides of special right triangles when given angle measures in radians by first converting to degrees and then solving.

Transfer Goals

Connect the ideas of circles and angles learned in Geometry to the ideas of angles in triangles having trigonometric properties.

Resources

Intermediate Algebra with Applications 5/6th ed by Aufmann/Barker/Lockwood

Online resources which include, but are not limited to: AP Classroom, Desmos, Class Kick, Delta Math, and Math XL.