Unit 7 - *Trigonometric Functions*

Overview

This is the first time that many students will see any trigonometry beyond SOHCAHTOA, for example, radian measure, reciprocal trig functions, trig graphs. We introduce trig functions of all angles using a circle and reference angles and then move on to use the Unit Circle as a special case. Students learn about the basic characteristics of sine and cosine graphs and then learn about transformations of these functions.

21st Century Capacities: Analyzing, Collective Intelligence

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS

MP 1 Make sense of problems and persevere in solving them
MP3 Construct viable arguments and critique the reasoning of others
MP5 Use appropriate tools strategically
MP7 Look for and make use of structure

F.TF.1 Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. F.TF.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.

F.TF.5 Choose trigonometric functions to model periodic phenomena with specified

Transfer:

Students will be able to independently use their learning in new situations to...

1. Manipulate equations and expressions to create order and establish relationships.
2. Draw conclusions about graphs and equations. (Analyzing)
3. Work respectfully and responsibly with others, exchanging and evaluating ideas to achieve a common objective (Collective Intelligence)

Meaning:

UNDERSTANDINGS: *Students will understand that:*

1. Effective problem solvers work to make sense of the problem before trying to solve it.
2. Mathematicians identify relevant tools, strategies, relationships, and/or information in order to draw conclusions.

ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:*

A. How can I break a problem down into manageable parts?
B. What methods can I use to monitor my thinking/accuracy?

amplitude, frequency, and midline.★	***Acquisition:***	
	Students will know…	*Students will be skilled at…*
	1. The definition of the three trig functions based off of right triangles 2. The relationship between radian measure and degrees and arc length 3. The unit circle definitions of the 3 trig functions 4. Vocabulary: unit circle, radian, sine, cosine, tangent, amplitude, periodic behavior, inverser, angle of elevation, angle of depression, coterminal, reference angle	1. Solving right triangles using trig using a calculator or a table 2. Using the ratios involved with 30-60-90 and 45-45-90 degree triangles to solve triangles 3. Solving application problems using right triangle trigonometry 4. Drawing angles in standard position 5. Finding and/or determining coterminal angles 6. Using radians to measure angles 7. Using the unit circle to find the radian measures of angles. 8. Given the trig function, finding and graphing the angle in the correct quadrant and vice versa 9. Using the unit circle as a special case to evaluate trig functions 10. Finding reference angles 11. Graphing sin and cos functions and their transformations 12. Using sin and cos functions to model behavior