Unit E - *Trigonometry*

Overview

Students will learn the basics of right triangle trigonometry, and will be able to apply trig ratios to solve word problems. Students will learn how to measure angles using radians, how to sketch angles in standard position, etc. The goal of this unit is to expose students to enough trigonometry for them to understand its value in the real world and to be successful in higher math.

21st Century Capacities: Analyzing, Synthesizing

Stage 1 - Desired Results

ESTABLISHED GOALS/ STANDARDS		
MP 1 Make sense sense of problems and persevere in solving them **MP5** Use appropriate tools strategically **MP7** Look for and make use of structure CCSS.MATH.CONTENT.HSN.Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. CCSS.MATH.CONTENT.HSA.SSE.A.1.B Interpret complicated expressions by viewing one or more of their parts as a single entity. CCSS.MATH.CONTENT.HSA.SSE.A.2 Use the structure of an expression to identify ways to rewrite it. CCSS.MATH.CONTENT.HSF.TF.A.1 Understand radian measure of an angle as the length of the arc on the unit circle subtended	*Transfer:*	
	Students will be able to independently use their learning in new situations to... 1. Draw conclusions about graphs, shapes, equations, or objects. (Analyzing and Synthesizing) 2. Make sense of a problem, initiate a plan, execute it, and evaluate the reasonableness of the solution. (Analyzing and Synthesizing) 3. Use appropriate tools to make reaching solutions more efficient, accessible and accurate. (Analyzing and Synthesizing)	
	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. 3. Mathematicians use geometric models, and spatial sense to interpret and make sense of the physical environment. 4. Mathematicians analyze characteristics and properties of geometric shapes to develop mathematical arguments about geometric relationships.	ESSENTIAL QUESTIONS: *Students will explore & address these recurring questions:* A. What math strategies can I use to solve the problem? B. How does classifying bring clarity? C. How can I use what I know in the world?

by the angle.	Acquisition:	
	Students will know…	*Students will be skilled at…*
CCSS.MATH.CONTENT.HSF.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.[*]	1. Definitions of sin, cos, tan trig ratios 2. The relationship between the sides of a 30-60-90 and a 45-45-90 triangle 3. The relationship between sin and cos of complementary angles 4. The definition / meaning of a radian 5. Vocabulary: opposite, adjacent, hypotenuse	1. Solving right triangles using trigonometry 2. Using a calculator to find a trig function or an inverse of a trig function 3. Converting between degrees and radians 4. Drawing angles in the coordinate plane in standard position 5. Determining if two angles are coterminal or finding coterminal angles of an angle 6. Finding sector areas 7. Finding the arc length of sectors
CCSS.MATH.CONTENT.HSG.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.		
CCSS.MATH.CONTENT.HSG.SRT.C.7 Explain and use the relationship between the sine and cosine of complementary angles.		
CCSS.MATH.CONTENT.HSG.SRT.C.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.[*]		
CCSS.MATH.CONTENT.HSG.C.B.5 Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.		