



Algebra 2 Level 2 - Unit 7 - Trigonometric Functions

Unit Focus

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.

Stage 1: Desired Results - Key Understandings

Standard(s)	Transfer	
Common Core Mathematics: 9-12 - Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. (CCSS.MATH.CONTENT.HSF.TF.A.1) - 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. (CCSS.MATH.CONTENT.HSF.TF.A.2) - Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. (CCSS.MATH.CONTENT.HSF.TF.B.5) - Make sense of problems and persevere in solving them. (CCSS.MATH.MP.1) - Construct viable arguments and critique the reasoning of others. (CCSS.MATH.MP.3) - Use appropriate tools strategically. (CCSS.MATH.MP.5) - Look for and make use of structure. (CCSS.MATH.MP.7) Madison Public Schools Profile of a Graduate - Analyzing: Examining information/data/ evidence from multiple sources to identify possible underlying assumptions, patterns, and relationships in order to make inferences. (POG.1.2) - Collective Intelligence: Working respectfully and responsibly with others, exchanging and evaluating ideas to achieve a common objective. (POG.3.1)	<i>Students will be able to independently use their learning to...</i> T1 manipulate equations/expressions or objects to create order and establish relationships. T2 draw conclusions about graphs and equations. T3 work respectfully and responsibly with others, exchanging and evaluating ideas to achieve a common objective.	
	Meaning	
	Understanding(s)	Essential Question(s)
	<i>Students will understand that...</i> U1 Effective problem solvers work to make sense of the problem before trying to solve it. U2 Mathematicians identify relevant tools, strategies, relationships, and/or information in order to draw conclusions.	<i>Students will keep considering...</i> Q1 How can I break a problem down into manageable parts? Q2 What methods can I use to monitor my thinking/accuracy?
	Acquisition of Knowledge and Skill	
	Knowledge	Skill(s)
	<i>Students will know...</i> K1 The definition of the three trig functions based off of right triangles K2 The relationship between radian measure and degrees and arc length K3 The unit circle definitions of the 3 trig functions	<i>Students will be skilled at...</i> S1 Solving right triangles using trig using a calculator or a table S2 Using the ratios involved with 30-60-90 and 45-45-90 degree triangles to solve triangles S3 Solving application problems using right triangle trigonometry

Stage 1: Desired Results - Key Understandings

	K4 Vocabulary: unit circle, radian, sine, cosine, tangent, amplitude, periodic behavior, inverser, angle of elevation, angle of depression, coterminal, reference angle	S4 Drawing angles in standard position S5 Finding and/or determining coterminal angles S6 Using radians to measure angles S7 Using the unit circle to find the radian measures of angles. S8 Given the trig function, finding and graphing the angle in the correct quadrant and vice versa S9 Using the unit circle as a special case to evaluate trig functions S10 Finding reference angles S11 Graphing sin and cos functions and their transformations S12 Using sin and cos functions to model behavior
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