

HPISD Curriculum: Pre Calculus Pre-AP

Title	Estimated Duration	6 Weeks					
Unit 3: Triangle Trigonometry	12 days	1	2	3	4	5	6

Unit Overview

Right Triangle Trigonometry

Generalizations/Enduring Understandings

<p>The student will understand that:</p>	<ul style="list-style-type: none"> • Inverse trigonometric functions are very different from reciprocal trigonometric functions. • Inverse trigonometric functions are useful when given side ratios instead of angle measures. • Solving right triangles require specialized formulas and are directly related to the unit circle. • Various techniques exist to solve an oblique triangle. • Various techniques exist to find the area of an oblique triangle. • Triangle trigonometry can be used in real life situations such as and finding approximate distances and calculating the bearing of a vessel.
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Concepts	Guiding/Essential Questions
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<ul style="list-style-type: none"> • Relationships 	<ul style="list-style-type: none"> • Why are inverse trigonometric functions not the same as reciprocal trigonometric functions? • When can inverse trigonometric functions be useful? • How does solving a right triangle relate to the unit circle? • Which formulas and techniques only work with right triangles? • What circumstances make Law of Sines or Law of Cosines a better technique? • How do I use triangle trigonometry to calculate bearings?
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Learning Targets

Students will select and apply effective strategies to solve right triangles and oblique triangles in mathematical and real life situations.

Formative Assessments		Summative Assessments	
TEKS:	Processes and Skills: What students should be able to DO	Facts: What students should KNOW	
<p>Determine the value of trigonometric ratios of angles and solve problems involving trigonometric ratios in mathematical and real-world problems. P.4.E</p> <p>Use trigonometry in mathematical and real-world problems, including directional bearing. P.4.F</p> <p>Use the Law of Sines in mathematical and real-world problems. P.4.G</p> <p>Use the Law of Cosines in mathematical and real-world problems. P.4.H</p>	<ul style="list-style-type: none"> Evaluate inverse trigonometric functions. Use Pythagorean Theorem to solve for missing sides of a right triangle. Use ratios of the special right triangles to solve problems. Use the Law of Sines and Law of Cosines to solve oblique triangles. Find the area of an oblique triangle. Find the area of polygons subdividing the polygon into triangles. Calculate bearings and distance using oblique triangle techniques. 	<ul style="list-style-type: none"> Relationship between the inverse trigonometric functions and the unit circle. The inverse trigonometric functions can be written as arcsine or \sin^{-1}. The x and y coordinates of the inverse functions have been reversed from the parent function. [ex: $y = \sin(x) \rightarrow x = \sin(y)$ which is re-written as $y = \arcsin(x)$] Pythagorean theorem only works with right triangles. Special right triangle ratios. The ambiguous case can have 2 solutions, 1 solution, or no solution. Navigators measure angles clockwise from the north rather than counter-clockwise from the positive x-axis. Bearing is an angle in navigation that is measured from the north in a clockwise direction. 	
Topics			
Triangle trigonometry		Applications of Triangle Trigonometry such as calculating bearings and estimating distances.	

Language of Instruction	
adjacent side	Law of Cosines
ambiguous case	Law of Sines
bearing	navigation
included angle	opposite side
Inverse trigonometric functions	surveying
State Assessment Connections	National Assessment Connections
Resources	