

WOODLAND HILLS HIGH SCHOOL LESSON PLAN

SAS and Understanding By Design Template

Name William Coles Date April 2, 2013 Length of Lesson 4 weeks Content Area Trigonometry & Advanced Math

STAGE I – DESIRED RESULTS			
LESSON TOPIC: Analytic Trigonometry	BIG IDEAS: <i>(Content standards, assessment anchors, eligible content) objectives, and skill focus)</i> <i>Families of functions exhibit properties and behaviors that can be recognized across representations. Functions can be transformed, combined, and composed to create new functions in mathematical and real world situations.</i> <i>M11.A.1.1 Represent and/or use numbers in equivalent forms</i> <i>M11.A.2.2 Use exponents, roots and/or absolute value to solve problems</i> <i>M11.B.2.1 Use and/or compare measurements of angles</i> <i>M11.C.1.4 Solve problems involving right triangles using the Pythagorean Theorem.</i> <i>M11.D.2.2 Simplify expressions involving polynomials</i>		
UNDERSTANDING GOALS (CONCEPTS): Functions and multiple representations Algebraic properties and processes <i>Students will understand:</i> <i>*How to apply trigonometric identities to simplify expressions</i> <i>*How to verify trigonometric identities algebraically</i> <i>*How to solve trigonometric equations</i> <i>*How to apply sum and difference formulas for sine and cosine functions</i> <i>*How to apply double-angle and half angle formulas</i>	ESSENTIAL QUESTIONS: <i>How do you decide which functional representation to choose when modelling a real world situation, and how would you explain your solution to the problem?</i>		
VOCABULARY: *Fundamental Trigonometric Identities, Reciprocal Identities, Quotient Identities, Pythagorean Identities, Cofunction Identities, Even/Odd Identities *Sum and Difference Formulas *Multiple-Angle Formulas, Double-Angle Formulas, Power-Reducing Formulas, Triple Angle Formulas, Half-Angle Formulas, Product-to-Sum Formulas, Sum-to-Product Formulas	STUDENT OBJECTIVES (COMPETENCIES/OUTCOMES): Represent functions (linear and non-linear) in multiple ways, including tables, algebraic rules, graphs, and contextual situations and make connections among these representations. Choose the appropriate functional representation to model a real world situation and solve problems relating to that situation. <i>Students will be able to:</i> *Apply trigonometric identities to simplify expressions. *Verify trigonometric identities algebraically *Solve trigonometric equations *Apply sum and difference formulas for sine and cosine functions *Apply double-angle and half angle formulas		
STAGE II – ASSESSMENT EVIDENCE			
PERFORMANCE TASK: Students will demonstrate adequate understanding via a section quiz and chapter test.	FORMATIVE ASSESSMENTS: #1. Thumbs Up #2. Graphic Organizers #3. Open Ended Questions Others:		
STAGE III: LEARNING PLAN			
INSTRUCTIONAL PROCEDURES:	MATERIALS AND RESOURCES:	INTERVENTIONS:	ASSIGNMENTS:

<p>Active Engagements used: #1. Note-Taking #2. Higher Level Thinking Skills Others:</p> <p>Describe usage: Note-Taking is used heavily in Trigonometry, both as a way to develop procedures and to practice them. Higher Level Thinking Skills are always demonstrated when relating current situations to previously-learned concepts.</p> <p>Scaffolding used: #1. Build on Prior Knowledge #2 . Provide Visual Support Others:</p> <p>Describe usage: Trigonometry is always building on prior knowledge. Not only are other trigonometry topics necessary for mastery of present material, but so are geometry and algebra skills.</p> <p>All Trigonometry classes are taught with Promethean Boards, which allow more detailed and accurate sketches, with reference to other materials, such as a unit circle.</p> <p>Other techniques used:</p> <p>MINI LESSON: Using identities to evaluate a function Simplifying a trigonometric expression Factoring trigonometric expressions Verifying a trigonometric identity Rewriting a trigonometric identity Trigonometric substitution Combining fractions before using identities Converting to sines and cosines Working with each side separately Two examples from Calculus</p>	<p>Textbook Notebook Projector/Promethean Board Graphing Calculator Ruler Graph Paper</p> <p>CONTENT AREA READING:</p>	<p>referred to TRI Limited small group/flexible grouping will occur. Students will be encouraged to stay for Trig lab, or find help with a math teacher during ASE or lunch.</p>	<p>p. 471-473 p. 481-484 p. 490-492 p. 501-504</p>
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<p>Collecting like terms Extracting square roots Factoring Factoring an equation of quadratic type Rewriting with a single trigonometric function Squaring and converting to quadratic type Functions with multiple angles Functions of multiple angles Using inverse functions Evaluating a trigonometric function Evaluating a trigonometric expression An application of a sum formula Proving a cofunction identity Deriving reduction formulas Solving a trigonometric equation Using double-angle formulas in sketching graphs Evaluating functions involving double angles Deriving a triple-angle formula Reducing the power of a trigonometric function Using a half-angle formula Writing products as sums Using a sum-to-product formula</p>			
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