

Common Core Mathematics Lesson Plan

Lesson Title: Relating sine and cosine of complementary angles	
<p>Learning Objective(s): Students will be able to explain and use the relationship between the sine and cosine of complementary angles . (G.SRT.7)</p>	<p>Materials: None</p>
<p>Topic Source (page numbers): Common Core Mathematics, Integrated Pathway Mathematics 2, Unit 5 Core publishers)</p>	<p>Key Vocabulary: sine, cosine, right angle, right triangle, complementary angles</p>
<p>Prerequisite / Background Knowledge: Understanding of triangles, angles, and ratios; introduction to sine and cosine.</p>	
Teacher Actions	Student Actions
<p>Introduction (5 minutes): Intro, definition of purpose, demonstrations, etc. -</p> <p>Teacher begins with a review of triangles and of right triangles, pointing out that the angle measures in a triangle add to 180 degrees and that the right angle takes up 90 degrees of that, making the other two angles complementary.</p> <p>Teacher reviews “soh cah toa” and definitions of sine and cosine as ratios of lengths of sides of the right triangle.</p> <p>Teacher then demonstrates how the sine of one angle is equal to the cosine of the other angle in the right triangle.</p>	<p>None</p>
<p>Guided Practice (20 minutes): include questioning tactics, engagement strategies and feedback methods -</p> <p>Teacher uses a triangle to demonstrate an example problem calculating that the sine of 60 degrees is equal to the cosine of 30 degrees.</p> <p>Teacher demonstrates the same equality (sine 60 = cosine 30) using a calculator, writing the values on the board.</p>	<p>Students repeat the example problem using a triangle (soh cah toa) and then, for the following, a calculator, verifying equality:</p> <p>sine 30 = cosine 60</p> <p>sine 45 = cosine 45</p> <p>sine 75 = cosine 15</p>
<p>Monitor: checks for understanding / assessments</p> <p>Teacher has students work individually to demonstrate that sine 10 = cosine 80 on a calculator</p>	<p>Students calculate sine of 10 degrees and cosine of 80 degrees.</p>

<p>Adjust / re-teach / additional practice (5 minutes):</p> <p>If needed, teacher walks through another example.</p>	<p>Additional examples as needed.</p>
<p>Independent practice / extensions (5 minutes):</p> <p>Teacher discusses how important it is to recognize the relationship between sines and cosines as they relate to other trigonometric functions such as tangent.</p>	<p>None</p>
<p>Closure (5 minutes): connect ideas, concepts, and skills together and with lesson objectives</p> <p>Teacher discusses the usefulness of the sine and cosine functions in the physical sciences as well as mathematics, and explains to students that they will utilize sine and cosine often in upcoming calculations.</p>	