

Curriculum Development Overview
Unit Planning for High School Mathematics

Unit Title	3 Rights Don't Make A....		Length of Unit	4 weeks
Focusing Lens(es)	Relationships	Standards and Grade Level Expectations Addressed in this Unit	MA10-GR.HS-S.4-GLE.2	
Inquiry Questions (Engaging-Debatable):	<ul style="list-style-type: none"> How can you determine the measure of something that you cannot measure physically? (MA10-GR.HS-S.4-GLE.2-IQ.1) 			
Unit Strands	Geometry: Similarity, Right Triangles, and Trigonometry			
Concepts	sides ratios, angles, right triangle, trigonometric functions, similar triangles			

Generalizations My students will Understand that...	Guiding Questions	
	Factual	Conceptual
The relationship between the side ratios and angles of a right triangle define the trigonometric functions. (MA10-GR.HS-S.4-GLE.2-EO.c)	What are trigonometric ratios? What is the relationship of the sine and cosine of complementary angles?	How does similarity explain that the side ratios in right triangles are a function of the angles of the triangle? How do we know that the sine of all 30 degree angles is the same?
Mathematicians use similar triangles to prove generalizable relationships. (MA10-GR.HS-S.4-GLE.2-EO.b.i)	How can you use right triangle similarity to prove the Pythagorean Theorem? How can similar triangle be used to prove that a line parallel to one side of a triangle divides the other two proportionally?	Why are similar triangles the foundation for mathematical proofs about side lengths of triangles?

Key Knowledge and Skills: My students will...	<i>What students will know and be able to do are so closely linked in the concept-based discipline of mathematics. Therefore, in the mathematics samples what students should know and do are combined.</i>
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- Prove theorems about similar triangles. (MA10-GR.HS-S.4-GLE.2-EO.b.i)
- **Prove that a line parallel to one side of a triangle divides the other two sides proportionally**
- **Prove that a line that divides two sides of a triangle proportionally is parallel to the third side**
- **Prove the Pythagorean Theorem using triangle similarity**
- Understand through similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles. (MA10-GR.HS-S.4-GLE.2-EO.c.i)
- Explain that by similarity, side ratios in right triangles are properties of the angles in the triangle
- Explain how this property of angles in similar right triangles leads to definitions of trigonometric ratios for acute angles
- Explain and use the relationship between the sine and cosine of complementary angles. (MA10-GR.HS-S.4-GLE.2-EO.c.ii)
- **Explain the relationship between the sine and cosine of complementary angles**
- **Use the relationship between the sine and cosine of complementary angles to solve real-world problems**
- Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. (MA10-GR.HS-S.4-GLE.2-EO.c.iii)
- **Use trigonometric ratios to solve real-world problems involving right triangles**
- **Use the Pythagorean theorem to solve real-world problems involving right triangles**

<p>Critical Language: includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline. EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: <i>“Mark Twain exposes the hypocrisy of slavery through the use of satire.”</i></p>	
<p>A student in _____ can demonstrate the ability to apply and comprehend critical language through the following statement(s):</p>	<p><i>I know the sine and cosine of the acute angles in a isosceles right triangle are the same.</i></p>
<p>Academic Vocabulary:</p>	<p>prove, explain, right triangles,</p>
<p>Technical Vocabulary:</p>	<p>similar triangles, sine, cosine, tangent, trigonometric ratios, Pythagorean Theorem, complementary angles, parallel lines</p>