# West Linn–Wilsonville School District

## **Mathematics – Course Statement**

Course Title: Geometry		
Length of Course:YearNumber of Credits:1Grade Level:9, 10, 12Prerequisites:Placement	1, 12 ent by previous math teacher or Algebra Date of Description/Revision: 2013	
Course Overview		
Geometry is the study of the three-dimensional space in which we live. Students will learn to interpret and draw three-dimensional objects, solve problem situations with geometric models, and apply properties of and relationships between figures. Students will be given the opportunity to enhance their algebra skills as they make the connections between algebra and geometry. Students will develop their three-dimensional visualization through class discussion, demonstrations, and discovery.		
Essential Questions	Concepts providing focus for student learning	
<ul> <li>What is Euclidean Geometry? Why did Euclid base his geometry on several main assumptions? What is non-Euclidean geometry?</li> <li>What is logical reasoning and how does one apply it in making and proving conjectures?</li> <li>What is measurement? What is area? What is volume? How are area, perimeter, and volume related?</li> <li>What are the properties of 1, 2, and 3-dimensional geometric figures? How does one determine if two shapes are similar? Congruent? What are the properties of similarity and congruency? What is right triangle trigonometry and how is it helpful in measurement of our world?</li> </ul>		
Proficiency Statements		
<ul> <li>Upon completion of course, students</li> <li>Make and test conjectures, form arguments and discuss the valid</li> <li>Communicate mathematical idea</li> <li>Indirectly measure 1-, 2- and 3-d</li> <li>Determine if two geometric figure</li> <li>Use sine, cosine and tangent to a</li> <li>Use coordinate geometry in their</li> </ul>	will be able to: ulate counter-examples, follow logical arguments, construct ity of those arguments. as using appropriate mathematical language and symbolism. limensional geometric figures. es are similar, congruent or neither. solve right triangles.	

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Course Standards/Units		
Units	Includes Standards Clusters	Mathematical Practice Standards
Unit 1 Congruence, Proof, and Constructions	<ul> <li>Experiment with transformations in the plane</li> <li>Understand congruence in terms of rigid motions</li> <li>Prove geometric theorems</li> <li>Make geometric constructions</li> </ul>	
<b>Unit 2</b> Similarity, Proof, and Trigonometry	<ul> <li>Understand similarity in terms of similarity transformations</li> <li>Prove theorems involving similarity</li> <li>Define trigonometric ratios and solve problems involving right triangles.</li> <li>Apply geometric concepts in modeling situations.</li> <li>Apply trigonometry to general triangles</li> </ul>	Make sense of problems and persevere in solving them. Reason abstractly and quantitatively.
<b>Unit 3</b> Extending to Three Dimensions	<ul> <li>Explain volume formulas and use them to solve problems.</li> <li>Visualize the relation between two-dimensional and three-dimensional objects</li> <li>Apply geometric concepts in modeling situations</li> </ul>	Construct viable arguments and critique the reasoning of others. Model with mathematics.
Unit 4 Connecting Algebra and Geometry through Coordinates	<ul> <li>Use coordinates to prove simple geometric theorems algebraically</li> <li>Translate between geometric descriptions and the equation for a conic section</li> </ul>	Use appropriate tools strategically. Attend to precision
<b>Unit 5</b> Circles With and Without Coordinates	<ul> <li>Understand and apply theorems about circles</li> <li>Find arc lengths and areas of sectors of circles</li> <li>Translate between the geometric description and the equation for a conic section</li> <li>Use coordinates to prove simple geometric theorem algebraically</li> <li>Apply geometric concepts in modeling situations</li> </ul>	Look for make use of structure. Look for and express regularity in repeated reasoning.
<b>Unit 6</b> Applications of Probability	<ul> <li>Understand independence and conditional probability and use them to interpret data</li> <li>Use the rules of probability to compute probabilities of compound events in a uniform probability model</li> <li>Use probability to evaluate outcomes of decisions</li> </ul>	

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Above table adopted from: National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for Mathematics.* Washington, DC: Authors.

#### Resources

• Text: Geometry, Glencoe McGraw-Hill, 2010