



Alignment Document
State of Wyoming and Aventa Learning Geometry

Geometry

Standards	Benchmarks	Unit Name	Course Topic Description
1 Students use numbers, number sense, and number relationships in a problem-solving situation.	1.1 Students represent and apply real numbers in a variety of forms.		
	1.2 Students apply the structure and properties of the real number system.	The Foundation of Geometry: Points and Lines	Properties of Equality
		The Foundation of Geometry: Points and Lines	Commutative Properties
		Reasoning and Intro to Proof	Using Algebraic Properties in Geometric Proofs
	1.3 Students explain their choice of estimation and problem solving strategies and justify results of solutions in problem-solving situations involving real numbers.		
	1.4 Students use proportional reasoning to solve problems.	Similarity	Ratios and Proportions
		Similarity	Proportions and Their Properties
Similarity		Similar Figures	
Similarity		Similar Triangles	
Similarity		When are Two Triangles Similar?	
Similarity		Prove that the Triangles are Similar	
	Similarity	Similar Quadrilaterals	



<p>2 Students apply geometric concepts, properties, and relationships in a problem-solving situation.</p>	<p>2.1 Students use transformations, congruency, symmetry, similarity, perpendicularity, parallelism, and the Pythagorean Theorem to solve problems.</p>	<p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p> <p>Parallel Lines and the Coordinate Plane</p>	<p>Positions of Two Lines in a Plane</p> <p>Concurrent Lines</p> <p>Parallel Lines and Transversals</p> <p>Postulates about Parallel Lines</p> <p>Angles Formed by Parallel Lines and their Transversals</p> <p>Alternate Interior Angles</p> <p>Alternate Exterior Angles</p> <p>Corresponding Angles</p> <p>Important Theorems About Parallel and Transversal Lines</p> <p>Two Perpendicular Number Lines</p> <p>Properties of Points on a Coordinate Plane</p> <p>Construction of a Line Parallel to an Axis Through a Point</p> <p>Relationships Between Two Lines on a Plane</p>
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	Plane	
	Parallel Lines and the Coordinate Plane	Intersecting Lines
	Parallel Lines and the Coordinate Plane	Parallel Lines
	Parallel Lines and the Coordinate Plane	Perpendicular Lines
	Special Triangles	Pythagorean Theorem
	Special Triangles	How to Apply Pythagorean Theorem
	Quadrilaterals and Polygons	Application of Pythagorean Theorem in Squares
	Similarity	Ratios and Proportions
	Similarity	Proportions and Their Properties
	Similarity	Similar Figures
	Similarity	Similar Triangles
	Similarity	When are Two Triangles Similar?
	Similarity	Prove that the Triangles are Similar
	Similarity	Similar Quadrilaterals
	The Right Triangle and Trigonometry	Review of Pythagorean Theorem
	The Right Triangle and Trigonometry	Indirect Measurement
	2.2 Students communicate, using	



	mathematical language, to:		
	2.2.a Interpret, represent, or create geometric figures;	<p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p>	<p>Basic Elements of Geometry: Points, Lines, and Planes</p> <p>Points</p> <p>Planes</p> <p>Line Segment</p> <p>Bisecting a Segment</p> <p>Measuring Segments</p> <p>Rays and Angles</p> <p>How Angles are Recognized?</p> <p>How Angles Are Measured?</p> <p>Bisector of an Angle</p> <p>How to Classify Angles</p> <p>Types of Angles</p>



	The Foundation of Geometry: Points and Lines	Vertical Angles
	The Foundation of Geometry: Points and Lines	Adjacent Angles
	The Foundation of Geometry: Points and Lines	Supplementary Angles
	The Foundation of Geometry: Points and Lines	Complementary Angles
	The Foundation of Geometry: Points and Lines	Right Angles and Perpendicular Lines
	The Foundation of Geometry: Points and Lines	Perpendicular-Bisector of a Segment
	Parallel Lines and the Coordinate Plane	Positions of Two Lines in a Plane
	Parallel Lines and the Coordinate Plane	Concurrent Lines
	Parallel Lines and the Coordinate Plane	Parallel Lines and Transversals
	Parallel Lines and the Coordinate Plane	Postulates about Parallel Lines
	Parallel Lines and the Coordinate Plane	Angles Formed by Parallel Lines and their Transversals
	Parallel Lines and the Coordinate Plane	Alternate Interior Angles
	Parallel Lines and the Coordinate	Alternate Exterior Angles

	Plane	
	Parallel Lines and the Coordinate Plane	Corresponding Angles
	Parallel Lines and the Coordinate Plane	Important Theorems About Parallel and Transversal Lines
	Parallel Lines and the Coordinate Plane	Two Perpendicular Number Lines
	Parallel Lines and the Coordinate Plane	Properties of Points on a Coordinate Plane
	Parallel Lines and the Coordinate Plane	Construction of a Line Parallel to an Axis Through a Point
	Triangles	The Structure of a Triangle
	Triangles	Theorem 1
	Triangles	Classification of Triangles
	Triangles	Angle Based Classification of Triangles
	Triangles	Special Segments in Triangles
	Triangles	Altitude
	Triangles	Median
	Triangles	Angle Bisector
	Triangles	Property of Bisectors of Triangles
	Triangles	Perpendicular Bisectors



	Triangles	Properties of Perpendicular Bisectors of Triangles
	Quadrilaterals and Polygons	Quadrilaterals
	Quadrilaterals and Polygons	Main Classes of Quadrilaterals
	Quadrilaterals and Polygons	A Square and Its Properties
	Quadrilaterals and Polygons	Rectangles and Their Properties
	Quadrilaterals and Polygons	Properties of Diagonals in Squares and Rectangles
	Quadrilaterals and Polygons	Parallelograms
	Quadrilaterals and Polygons	Rhombus and Its Properties
	Quadrilaterals and Polygons	The Trapezoid
	Quadrilaterals and Polygons	What are Polygons
	Quadrilaterals and Polygons	Convex Polygons
	Quadrilaterals and Polygons	Concave Polygons
	Quadrilaterals and Polygons	Special Segments in a Polygon: Diagonals
	Circles	What is a Circle?
	Circles	Central Angles
	Circles	Inscribed Angles
	Circles	Tangent-Chord Angles
	2.2.b Draw or build figures from a mathematical description;	



	<p>2.2.c Analyze properties and determine attributes of 2- and 3-dimensional objects.</p>	<p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p> <p>The Foundation of Geometry: Points and Lines</p>	<p>Basic Elements of Geometry: Points, Lines, and Planes</p> <p>Points</p> <p>Planes</p> <p>Line Segment</p> <p>Rays and Angles</p> <p>How Angles are Recognized?</p> <p>How Angles Are Measured?</p> <p>Bisector of an Angle</p> <p>How to Classify Angles</p> <p>Types of Angles</p> <p>Vertical Angles</p> <p>Adjacent Angles</p> <p>Supplementary Angles</p>
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	Points and Lines	
	The Foundation of Geometry: Points and Lines	Complementary Angles
	The Foundation of Geometry: Points and Lines	Right Angles and Perpendicular Lines
	Reasoning and Intro to Proof	Inductive Reasoning
	Reasoning and Intro to Proof	Conjecture
	Reasoning and Intro to Proof	Geometric Induction
	Reasoning and Intro to Proof	Language of Reasoning
	Reasoning and Intro to Proof	Postulates and Converses
	Reasoning and Intro to Proof	Deductive Reasoning
	Reasoning and Intro to Proof	Law of Detachment
	Reasoning and Intro to Proof	Law of Syllogism
	Reasoning and Intro to Proof	Inverse of a Conditional Statement
	Reasoning and Intro to Proof	Using Algebraic Properties in Geometric Proofs
	Reasoning and Intro to Proof	Geometric Postulates
	Reasoning and Intro to Proof	A Sample Geometric Proof Using Algebraic Postulates
	Reasoning and Intro to Proof	Two Column Proof With Segments and Angles
	Parallel Lines and the Coordinate Plane	Parallel Lines and Transversals



	Parallel Lines and the Coordinate Plane	Postulates about Parallel Lines
	Parallel Lines and the Coordinate Plane	Angles Formed by Parallel Lines and their Transversals
	Parallel Lines and the Coordinate Plane	Alternate Interior Angles
	Parallel Lines and the Coordinate Plane	Alternate Exterior Angles
	Parallel Lines and the Coordinate Plane	Corresponding Angles
	Parallel Lines and the Coordinate Plane	Important Theorems About Parallel and Transversal Lines
	Parallel Lines and the Coordinate Plane	Two Perpendicular Number Lines
	Parallel Lines and the Coordinate Plane	Properties of Points on a Coordinate Plane
	Parallel Lines and the Coordinate Plane	Relationships Between Two Lines on a Plane
	Parallel Lines and the Coordinate Plane	Intersecting Lines
	Parallel Lines and the Coordinate Plane	Parallel Lines
	Parallel Lines and the Coordinate Plane	Perpendicular Lines



	Triangles	Theorem 1
	Triangles	Classification of Triangles
	Triangles	Angle Based Classification of Triangles
	Triangles	Congruence of Geometric Figures
	Triangles	Congruent Postulate 1 (SAS Postulate)
	Triangles	Postulate 2 (ASA Postulate)
	Triangles	Postulate 3 (SSS Postulate)
	Triangles	Postulate 4 (AAS Postulate)
	Triangles	Postulate 5 (HL Postulate)
	Triangles	Special Segments in Triangles
	Triangles	Altitude
	Triangles	Median
	Triangles	Angle Bisector
	Triangles	Property of Bisectors of Triangles
	Special Triangles	Theorem 1
	Special Triangles	Properties of Medians of Isosceles Triangle
	Special Triangles	Properties of Altitudes of Isosceles Triangle
	Special Triangles	Properties of Angle Bisectors of Isosceles Triangle



	Special Triangles	Properties of Perpendicular Bisectors of Isosceles Triangle
	Special Triangles	Equilateral or Equiangular Triangle
	Special Triangles	When Two Equilateral Triangles Are Congruent
	Special Triangles	Right Triangles: Basic Theorem
	Special Triangles	30-60-90 Triangle
	Special Triangles	45-45-90 Triangle (Isosceles Right Triangle)
	Special Triangles	Side-Angle Inequality in a Triangle
	Special Triangles	Exterior Angle Inequality
	Special Triangles	Indirect Proof
	Special Triangles	A Practical Example
	Special Triangles	Shortest Distance Between a Point and a Line
	Special Triangles	Triangle Inequality
	Quadrilaterals and Polygons	A Square and Its Properties
	Quadrilaterals and Polygons	Rectangles and Their Properties
	Quadrilaterals and Polygons	Properties of Diagonals in Squares and Rectangles
	Quadrilaterals and Polygons	Parallelograms
	Quadrilaterals and Polygons	Parallelograms Proof
	Quadrilaterals and Polygons	Rhombus and Its Properties

	Quadrilaterals and Polygons	The Trapezoid
	Quadrilaterals and Polygons	Apothems
	Quadrilaterals and Polygons	Sum of the Interior Angles of a Convex Polygon
	Similarity	Proportions and Their Properties
	Similarity	Similar Figures
	Similarity	Similar Triangles
	Similarity	When are Two Triangles Similar?
	Similarity	Prove that the Triangles are Similar
	Similarity	Similar Quadrilaterals
	Circles	What is a Circle?
	Circles	Theorems About Chords and Tangents
	Circles	Central Angles
	Circles	Inscribed Angles
	Circles	Tangent-Chord Angles
	The Right Triangle and Trigonometry	Review of Pythagorean Theorem
	The Right Triangle and Trigonometry	Indirect Measurement
	The Right Triangle and Trigonometry	Sine Ratio



	The Right Triangle and Trigonometry	Cosine Ratio
	The Right Triangle and Trigonometry	Tangent Ratio
	The Right Triangle and Trigonometry	Cotangent Ratio
	The Right Triangle and Trigonometry	The Fundamental Identity of Trigonometry
	The Right Triangle and Trigonometry	Identity 1
	The Right Triangle and Trigonometry	Identity 2
	The Right Triangle and Trigonometry	Identity 3
	The Right Triangle and Trigonometry	Identity 4
	The Right Triangle and Trigonometry	Special Segments in Triangles
	The Right Triangle and Trigonometry	Law of Cosines
2.3 Students communicate the reasoning used in identifying geometric relationships in problem-solving situations.	Reasoning and Intro to Proof	Inductive Reasoning
	Reasoning and Intro to Proof	Conjecture
	Reasoning and Intro to Proof	Recognizing Number Patterns By Inductive Method



	Reasoning and Intro to Proof	Counterexamples
	Reasoning and Intro to Proof	Geometric Induction
	Reasoning and Intro to Proof	Language of Reasoning
	Reasoning and Intro to Proof	Truth Tables
	Reasoning and Intro to Proof	Negation of a Statement
	Reasoning and Intro to Proof	Compound Statements
	Reasoning and Intro to Proof	Postulates and Converses
	Reasoning and Intro to Proof	Deductive Reasoning
	Reasoning and Intro to Proof	Law of Detachment
	Reasoning and Intro to Proof	Law of Syllogism
	Reasoning and Intro to Proof	Inverse of a Conditional Statement
	Reasoning and Intro to Proof	Using Algebraic Properties in Geometric Proofs
	Reasoning and Intro to Proof	Geometric Postulates
	Reasoning and Intro to Proof	A Sample Geometric Proof Using Algebraic Postulates
	Reasoning and Intro to Proof	Two Column Proof With Segments and Angles
	Parallel Lines and the Coordinate Plane	Postulates about Parallel Lines
	Parallel Lines and the Coordinate Plane	Important Theorems About Parallel and Transversal Lines



	Triangles	Theorem 1
	Triangles	Congruent Postulate 1 (SAS Postulate)
	Triangles	Postulate 2 (ASA Postulate)
	Triangles	Postulate 3 (SSS Postulate)
	Triangles	Postulate 4 (AAS Postulate)
	Triangles	Postulate 5 (HL Postulate)
	Triangles	Property of Bisectors of Triangles
	Triangles	Properties of Perpendicular Bisectors of Triangles
	Special Triangles	Theorem 1
	Special Triangles	Properties of Medians of Isosceles Triangle
	Special Triangles	Properties of Altitudes of Isosceles Triangle
	Special Triangles	Properties of Angle Bisectors of Isosceles Triangle
	Special Triangles	Properties of Perpendicular Bisectors of Isosceles Triangle
	Special Triangles	When Two Equilateral Triangles Are Congruent
	Special Triangles	Right Triangles: Basic Theorem
	Special Triangles	30-60-90 Triangle
	Special Triangles	45-45-90 Triangle (Isosceles Right Triangle)

	Special Triangles	Pythagorean Theorem
	Special Triangles	How to Apply Pythagorean Theorem
	Special Triangles	Side-Angle Inequality in a Triangle
	Special Triangles	Exterior Angle Inequality
	Special Triangles	Indirect Proof
	Special Triangles	A Practical Example
	Quadrilaterals and Polygons	A Square and Its Properties
	Quadrilaterals and Polygons	Rectangles and Their Properties
	Quadrilaterals and Polygons	Properties of Diagonals in Squares and Rectangles
	Quadrilaterals and Polygons	Parallelograms
	Quadrilaterals and Polygons	Parallelograms Proof
	Quadrilaterals and Polygons	Rhombus and Its Properties
	Quadrilaterals and Polygons	The Trapezoid
	Quadrilaterals and Polygons	Apothems
	Quadrilaterals and Polygons	Sum of the Interior Angles of a Convex Polygon
	Quadrilaterals and Polygons	Measure of an Interior Angle in Regular Convex Polygon
	Similarity	When are Two Triangles Similar?
	Similarity	Prove that the Triangles are Similar

		Similarity	Similar Quadrilaterals
		Perimeters and Areas	Areas of Triangles
2.4 Students solve problems involving the coordinate plane such as the distance between two points, the midpoint, and slope.	Parallel Lines and the Coordinate Plane	Length of a Segment on a Coordinate Plane	
	Parallel Lines and the Coordinate Plane	Distance Formula	
	Parallel Lines and the Coordinate Plane	Midpoint of a Segment	
	Parallel Lines and the Coordinate Plane	How to Write the Equation of a Line	
	Parallel Lines and the Coordinate Plane	Slope Form	
	Parallel Lines and the Coordinate Plane	Point-Slope Form	
	Parallel Lines and the Coordinate Plane	Slope-Intercept Form	
	Parallel Lines and the Coordinate Plane	How to Display a Line on the Coordinate Plane	
2.5 Students connect geometry with other mathematical topics.	The Foundation of Geometry: Points and Lines	The Concept of "Variable" in Geometry	
	The Foundation of Geometry: Points and Lines	Properties of Equality	
	The Foundation of Geometry: Points and Lines	Commutative Properties	
	Reasoning and Intro to Proof	Using Algebraic Properties in Geometric Proofs	

		Reasoning and Intro to Proof	A Sample Geometric Proof Using Algebraic Postulates
3 Students use a variety of tools and techniques of measurement in a problem-solving situation.	3.1 Students apply estimation and measurement using the appropriate methods and units to solve problems involving length, weight/mass, area, surface area, volume, and angle measure.		
	3.2 Students demonstrate an understanding of both metric and U. S. customary systems. Students are able to convert within each system.		
	3.3 Students identify and apply scale, ratios, and proportions in solving measurement problems.	Similarity	Ratios and Proportions
		Similarity	Proportions and Their Properties
		Similarity	Similar Figures
3.4 Students solve problems of angle measure including those involving polygons or parallel lines cut by a transversal.	Similarity	Similar Triangles	
	Similarity	When are Two Triangles Similar?	
	Similarity	Prove that the Triangles are Similar	
	Similarity	Similar Quadrilaterals	
	The Foundation of Geometry: Points and Lines	How Angles Are Measured?	
	The Foundation of Geometry: Points and Lines	Bisector of an Angle	
	Parallel Lines and the Coordinate Plane	Parallel Lines and Transversals	
	Parallel Lines and the Coordinate Plane	Postulates about Parallel Lines	

		Parallel Lines and the Coordinate Plane	Angles Formed by Parallel Lines and their Transversals
		Parallel Lines and the Coordinate Plane	Alternate Interior Angles
		Parallel Lines and the Coordinate Plane	Alternate Exterior Angles
		Parallel Lines and the Coordinate Plane	Corresponding Angles
		Parallel Lines and the Coordinate Plane	Important Theorems About Parallel and Transversal Lines
	3.5 Students solve indirect measurement problems.	The Right Triangle and Trigonometry	Indirect Measurement
		The Right Triangle and Trigonometry	Sine Ratio
		The Right Triangle and Trigonometry	Cosine Ratio
		The Right Triangle and Trigonometry	Tangent Ratio
		The Right Triangle and Trigonometry	Cotangent Ratio
		The Right Triangle and Trigonometry	The Fundamental Identity of Trigonometry
		The Right Triangle and Trigonometry	Identity 1
		The Right Triangle and	Identity 2



		Trigonometry The Right Triangle and Trigonometry The Right Triangle and Trigonometry The Right Triangle and Trigonometry The Right Triangle and Trigonometry	Identity 3 Identity 4 Special Segments in Triangles Law of Cosines
4 Students use algebraic methods to investigate, model, and interpret patterns and functions involving numbers, shapes, data, and graphs in a problem-solving situation.	4.1 Students use algebraic concepts, symbols, and skills to represent and solve real-world problems.		
	4.2 Students write, model, and evaluate expressions, functions, equations, and inequalities.	The Foundation of Geometry: Points and Lines	The Concept of "Variable" in Geometry
		Parallel Lines and the Coordinate Plane	How to Write the Equation of a Line
		Parallel Lines and the Coordinate Plane	Slope Form
4.3 Students graph linear equations and interpret the results in solving algebraic problems.	Parallel Lines and the Coordinate Plane	Point-Slope Form	
	Parallel Lines and the Coordinate Plane	Slope-Intercept Form	
	Parallel Lines and the Coordinate Plane	How to Display a Line on the Coordinate Plane	
		Parallel Lines and the Coordinate Plane	How to Write the Equation of a Line
		Parallel Lines and the Coordinate Plane	Slope Form



	Plane	
	Parallel Lines and the Coordinate Plane	Point-Slope Form
	Parallel Lines and the Coordinate Plane	Slope-Intercept Form
	Parallel Lines and the Coordinate Plane	How to Display a Line on the Coordinate Plane
4.4 Students solve, graph, or interpret systems of linear equations.		
4.5 Students connect algebra with other mathematical topics.	The Foundation of Geometry: Points and Lines	The Concept of "Variable" in Geometry
	The Foundation of Geometry: Points and Lines	Properties of Equality
	The Foundation of Geometry: Points and Lines	Commutative Properties
	Reasoning and Intro to Proof	Using Algebraic Properties in Geometric Proofs
	Parallel Lines and the Coordinate Plane	Distance Formula
	Parallel Lines and the Coordinate Plane	How to Write the Equation of a Line
	Parallel Lines and the Coordinate Plane	Slope Form
	Parallel Lines and the Coordinate Plane	Point-Slope Form
	Parallel Lines and the Coordinate Plane	Slope-Intercept Form



<p>5 Students use data analysis and probability to analyze given situations and the results of experiments.</p>	<p>5.1 Students apply knowledge of mean, median, mode, and range to interpret and evaluate information and data.</p>		
	<p>5.2 Students draw reasonable inferences from statistical data and/or correlation/best fit line to predict outcomes.</p>		
	<p>5.3 Students communicate about the likelihood of events using concepts from probability.</p>		
	<p>5.3.a sample space</p>		
	<p>5.3.b evaluate simple probabilities</p>		
	<p>5.3.c evaluate experimental vs. theoretical</p>		
	<p>5.4 Students determine, collect, organize, and analyze relevant data needed to make conclusions.</p>		