



Alignment Document
State of North Carolina and Aventa Learning Geometry

Geometry

Goals	Standards	Unit Name	Course Topic Description
1 The learner will perform operations with real numbers to solve problems.	1.01 Use the trigonometric ratios to model and solve problems involving right triangles.	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	Special Segments in Triangles

		Trigonometry	
		The Right Triangle and Trigonometry	Law of Cosines
	1.02 Use length, area, and volume of geometric figures to solve problems. Include arc length, area of sectors of circles; lateral area, surface area, and volume of three-dimensional figures; and perimeter, area, and volume of composite figures.	Perimeters and Areas	Areas of Triangles
		Perimeters and Areas	Area of Polygon
		Perimeters and Areas	Perimeter of Regular Polygon
		Perimeters and Areas	Area and Perimeter of a Square
		Perimeters and Areas	Area and Perimeter of Rectangle
		Perimeters and Areas	Area and Perimeter of the Parallelogram
		Perimeters and Areas	Area and Perimeter of Rhombus
		Perimeters and Areas	Area and Perimeter of Trapezoid
		Perimeters and Areas	Circumference of a Circle
		Perimeters and Areas	Area of a Circle
		Perimeters and Areas	Sector of a Circle and Its Area
	1.03 Use length, area, and volume to model and solve problems involving probability.		
2 The learner will use geometric and algebraic properties of figures to solve problems and write proofs.	2.01 Use logic and deductive reasoning to draw conclusions and solve problems.	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
2.02 Apply properties, definitions, and theorems of angles and lines to solve problems and write proofs.	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
	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
	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
	Triangles	Perpendicular Bisectors
	Triangles	Properties of Perpendicular Bisectors of Triangles
2.03 Apply properties, definitions, and theorems of two-dimensional figures to solve problems and write proofs:		
2.03.a 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	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
2.03.b Quadrilaterals.	Quadrilaterals and Polygons	A Square and Its Properties

		Quadrilaterals and Polygons	Application of Pythagorean Theorem in Squares
		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	Apothems
	2.03.c Other polygons.	Quadrilaterals and Polygons	Sum of the Interior Angles of a Convex Polygon
		Quadrilaterals and Polygons	Measure of an Interior Angle in Regular Convex Polygon
	2.03.d Circles.	Circles	Theorems About Chords and Tangents
	Circles	Central Angles	
	Circles	Inscribed Angles	
	Circles	Tangent-Chord Angles	
2.04 Develop and apply properties of solids to solve problems.			
3 The learner will transform geometric figures in the coordinate plane algebraically.	3.01 Describe the transformation (translation, reflection, rotation, dilation) of polygons in the coordinate plane in simple algebraic terms.	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
	3.02 Use matrix operations (addition, subtraction, multiplication, scalar multiplication) to describe the transformation of polygons in the coordinate plane.		