



Alignment Document

State of Wisconsin And Aventa Learning Geometry

Geometry 2005-2007 Benchmark Blueprint

State Standard Number	State Standard Area / Description	Unit Name	Course Topic Description
A.12	Mathematical Processes		
A.12.1	Use reason and logic to		
A.12.1.a	evaluate information	Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	Numerical Patterns
		Reasoning and Introduction to Proof	Geometric Reasoning
A.12.1.b	perceive patterns	Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	Numerical Patterns
		Reasoning and Introduction to Proof	Geometric Reasoning
A.12.1.c	identify relationships	Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	Numerical Patterns
		Reasoning and Introduction to Proof	Geometric Reasoning
A.12.1.d	formulate questions, pose problems, and make and test conjectures	Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	Numerical Patterns
		Reasoning and Introduction to Proof	Geometric Reasoning



A.12.1.e	pursue ideas that lead to further understanding and deeper insight	Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	Numerical Patterns
		Reasoning and Introduction to Proof	Geometric Reasoning
A.12.2	Communicate logical arguments and clearly show		
A.12.2.a	why a result does or does not make sense	Reasoning and Introduction to Proof	If-Then Statements, Converses, and Postulates
A.12.2.b	why the reasoning is or is not valid	Reasoning and Introduction to Proof	If-Then Statements, Converses, and Postulates
A.12.2.c	an understanding of the difference between examples that support a conjecture and a proof of the conjecture	Reasoning and Introduction to Proof	If-Then Statements, Converses, and Postulates
		Reasoning and Introduction to Proof	If-Then Statements, Converses, and Postulates
A.12.3	Analyze non-routine problems and arrive at solutions by various means, including models and simulations, often starting with provisional conjectures and progressing, directly or indirectly, to a solution, justification, or counter-example	Reasoning and Introduction to Proof	If-Then Statements, Converses, and Postulates
		Reasoning and Introduction to Proof	Deductive Reasoning
		Reasoning and Introduction to Proof	Two-Column Proof
A.12.4	Develop effective oral and written presentations employing correct mathematical terminology, notation, symbols, and conventions for mathematical arguments and display of data	Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	If-Then Statements, Converses, and Postulates
		Reasoning and Introduction to Proof	Deductive Reasoning
		Reasoning and Introduction to Proof	Two-Column Proof

A.12.5	Organize work and present mathematical procedures and results clearly, systematically, succinctly, and correctly	Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	If-Then Statements, Converses, and Postulates
		Reasoning and Introduction to Proof	Deductive Reasoning
		Reasoning and Introduction to Proof	Two-Column Proof
A.12.6	Read and understand		
A.12.6.a	mathematical texts and other instructional materials	All Units	All Topics
A.12.6.b	writing about mathematics (e.g., articles in journals)		
0	mathematical ideas as they are used in other contexts		
B.12	Number Operations and Relationships		
B.12.1	Use complex counting procedures such as union and intersection of sets and arrangements (permutations and combinations) to solve problems		
B.12.2	Compare real numbers using		
B.12.2.a	order relations ($>$, $<$) and transitivity	Reasoning and Introduction to Proof	Properties From Algebra and Proof
B.12.2.b	ordinal scales including logarithmic (e.g., Richter, pH rating)		
B.12.2.c	arithmetic differences		
B.12.2.d	ratios, proportions, percents, rates of change	Similarity Topic	Ratio and Proportion
		Similarity Topic	Similar Triangles
		Similarity Topic	Similar Quadrilaterals and Polygons
B.12.3	Perform and explain operations on real numbers (add, subtract, multiply, divide, raise to a power, extract a root, take opposites and reciprocals, determine absolute value)		

B.12.4	In problem-solving situations involving the application of different number systems (natural, integers, rational, real) select and use appropriate		
B.12.4.a	computational procedures		
B.12.4.b	properties (e.g., commutativity, associativity, inverses)	Connections from Algebra	Properties of Equality, Commutative, Transitive, Substitution, Distributive
B.12.4.c	modes of representation (e.g., rationals as repeating decimals, indicated roots as fractional exponents)		
B.12.5	Create and critically evaluate numerical arguments presented in a variety of classroom and real-world situations (e.g., political, economic, scientific, social)		
B.12.6	Routinely assess the acceptable limits of error when		
B.12.6.a	evaluating strategies		
B.12.6.b	testing the reasonableness of results		
B.12.6.c	using technology to carry out computations		
C.12	Geometry		
C.12.1	Identify, describe, and analyze properties of figures, relationships among figures, and relationships among their parts by	Language of Geometry	Points, Lines, and Planes
		Language of Geometry	Measuring Segments
		Language of Geometry	Rays and Angles
		Language of Geometry	Classifying Angles
		Language of Geometry	Pairs of Angles
		Language of Geometry	Right Angles and Perpendicular Lines
		Parallel Lines and Coordinate Plane	Lines and Points in a Plane (parallel lines and transversals)
		Parallel Lines and Coordinate Plane	Distance Formula
		Parallel Lines and Coordinate Plane	Midpoint Formula



		Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane (slope, point-slope form, slope-intercept form, finding an equation of a line, parallel/perpendicular slopes)
		Triangles, Basic Closed Figures in Geometry	Structure of Triangles
		Triangles, Basic Closed Figures in Geometry	Congruent Triangles and Congruence Tests
		Triangles, Basic Closed Figures in Geometry	Special Segments in Triangles
		Special Triangles and Special Relationships in Triangles	Isosceles Triangles
		Special Triangles and Special Relationships in Triangles	Equilateral Triangles
		Special Triangles and Special Relationships in Triangles	Right Triangles and Pythagorean Theorem
		Special Triangles and Special Relationships in Triangles	Triangle Inequalities
		Quadrilaterals and Polygons	Square and Rectangle
		Quadrilaterals and Polygons	Parallelogram
		Quadrilaterals and Polygons	Rhombus and Trapezoid
		Quadrilaterals and Polygons	Polygons
		Similarity	Ratio and Proportion
		Similarity	Similar Triangles
		Similarity	Similar Quadrilaterals and Polygons
		Circles	Arcs and Circular Angles
		Circles	Special Segments in Circles
		Circles	Equations of Circles
		Right Triangles and Trigonometry	Review of Pythagorean Theorem
		Right Triangles and Trigonometry	Special Ratios in a Right Triangle



		Right Triangles and Trigonometry	Equations of Circles
		Perimeters and Areas	Perimeters and Areas of Triangles and Polygon
		Perimeters and Areas	Perimeters and Areas of Quadrilaterals
		Perimeters and Areas	Circumferences and Areas of Circles
C.12.1.a	constructing physical models	Language of Geometry	Construction-Bisecting a Segment
		Language of Geometry	Bisecting an Angle
		Parallel Lines and Coordinate Plane	Construction-Line Parallel to Axis
C.12.1.b	drawing precisely with paper-and-pencil, hand calculators, and computer software		
C.12.1.c	using appropriate transformations (e.g., translations, rotations, reflections, enlargements)		
C.12.1.d	using reason and logic	Reasoning and Introduction to Proof	If-Then Statements, Converses, and Postulates
C.12.2	Use geometric models to solve mathematical and real-world problems	Language of Geometry	Measuring Segments
		Language of Geometry	Rays and Angles
		Language of Geometry	Classifying Angles
		Language of Geometry	Pairs of Angles
		Language of Geometry	Right Angles and Perpendicular Lines
		Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	If-Then, Converses, and Postulates
		Reasoning and Introduction to Proof	Determining Truth of Statements
		Reasoning and Introduction to Proof	Properties from Algebra and Proofs
		Reasoning and Introduction to Proof	Two Column Proof
		Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
		Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane



		Triangles: Basic Closed Figures in Geometry	Structure of Triangles
		Triangles: Basic Closed Figures in Geometry	Congruent Triangles and Congruence Tests
		Triangles: Basic Closed Figures in Geometry	Special Segments in Triangles
		Special Triangles and Special Relationships in Triangles	Isosceles Triangles
		Special Triangles and Special Relationships in Triangles	Equilateral Triangles
		Special Triangles and Special Relationships in Triangles	Right Triangles and Pythagorean Theorem
		Special Triangles and Special Relationships in Triangles	Triangle Inequalities
		Quadrilaterals and Polygons	Square and Rectangle
		Quadrilaterals and Polygons	Parallelogram
		Quadrilaterals and Polygons	Rhombus and Trapezoid
		Quadrilaterals and Polygons	Polygons
		Similarity	Ratio and Proportion
		Similarity	Similar Triangles
		Similarity	Similar Quadrilaterals and Polygons
		Circles	Arcs and Circular Angles
		Circles	Special Segments in Circles
		Circles	Equations of Circles
		Right Triangles and Trigonometry	Review of Pythagorean Theorem
		Right Triangles and Trigonometry	Special Ratios in a Right Triangle
		Right Triangles and Trigonometry	Laws of Sine and Cosine
		Perimeters and Areas	Perimeters and Areas of Triangles and Polygons
		Perimeters and Areas	Perimeters and Areas of Quadrilaterals

		Perimeters and Areas	Circumferences and Areas of Circles
C.12.3	Present convincing arguments by means of demonstration, informal proof, counter-examples, or any other logical means to show the truth of		
C.12.3.a	statements (e.g., these two triangles are not congruent)	Reasoning and Introduction to Proof	Inductive Reasoning
		Reasoning and Introduction to Proof	Deductive Reasoning
		Reasoning and Introduction to Proof	If-Then, Converses and Postulates
		Reasoning and Introduction to Proof	Two-Column Proof
		Triangles Basic Closed Figures in Geometry	Structure of Triangles Exercise 1
		Triangles Basic Closed Figures in Geometry	Congruent Triangles and Congruence Tests Exercise 2
		Quadrilaterals and Polygons	Rhombus and Trapezoid Exercise 3
		Quadrilaterals and Polygons	Polygons Exercise 4
		Special Triangles and Special Relationships in Triangles	Equilateral Triangles Exercise 2
		Special Triangles and Special Relationships in Triangles	Triangle Inequalities Exercise 4
		Similarity	Similar Triangles Exercise 2
		Circles	Arcs and Circular Angles Exercise 1
C.12.3.b	generalizations (e.g., the Pythagorean theorem holds for all right triangles)	Special Triangles and Special Relationships in Triangles	Right Triangles and Pythagorean Theorem
C.12.4	Use the two-dimensional rectangular coordinate system and algebraic procedures to describe and characterize geometric properties and relationships such as slope, intercepts, parallelism, and perpendicularity	Parallel Lines and Coordinate Plane	Equations of Lines in Coordinate Plane
C.12.5	Identify and demonstrate an understanding of the three ratios used in right-triangle trigonometry (sine, cosine, tangent)	Right Triangles and Trigonometry	Special Ratios in a Right Triangle

D.12	Measurement		
D.12.1	Identify, describe, and use derived attributes (e.g., density, speed, acceleration, pressure) to represent and solve problem situations		
D.12.2	Select and use tools with appropriate degree of precision to determine measurements directly within specified degrees of accuracy and error (tolerance)	Language of Geometry	Measuring Angles and Segments
D.12.3	Determine measurements indirectly, using		
D.12.3.a	estimation		
D.12.3.b	proportional reasoning, including those involving squaring and cubing (e.g., reasoning that areas of circles are proportional to the squares of their radii)	Similarity	Ratio and Proportion
		Similarity	Similar Triangles
		Similarity	Similar Quadrilaterals and Polygons
D.12.3.c	techniques of algebra, geometry, and right triangle trigonometry	Special Triangles and Special Relationships in Triangles	Isosceles Triangles
		Special Triangles and Special Relationships in Triangles	Equilateral Triangles
		Special Triangles and Special Relationships in Triangles	Right Triangles and Pythagorean Theorem
		Special Triangles and Special Relationships in Triangles	Triangle Inequalities
D.12.3.d	formulas in applications (e.g., for compound interest, distance formula)	Parallel Lines and Coordinate Plane	Lines and Points in Coordinate Plane
D.12.3.e	geometric formulas to derive lengths, areas, or volumes of shapes and objects (e.g., cones, parallelograms, cylinders, pyramids)	Perimeters and Areas	Perimeters and Areas of Triangles and Polygons
		Perimeters and Areas	Perimeters and Areas of Quadrilaterals
		Perimeters and Areas	Circumferences and Areas of Circles

D.12.3.f	geometric relationships and properties of circles and polygons (e.g., size of central angles, area of a sector of a circle)	Circles	Special Angles in Circles
		Perimeters and Areas	Perimeters and Areas of Triangles and Polygons
		Perimeters and Areas	Perimeters and Areas of Quadrilaterals
		Perimeters and Areas	Circumferences and Areas of Circles
D.12.3.g	conversion constants to relate measures in one system to another (e.g., meters to feet, dollars to Deutschmarks)		
E.12	Statistics and Probability		
E.12.1	Work with data in the context of real-world situations by		
E.12.1.a	formulating hypotheses that lead to collection and analysis of one- and two-variable data		
E.12.1.b	designing a data collection plan that considers random sampling, control groups, the role of assumptions, etc.		
E.12.1.c	conducting an investigation based on that plan		
E.12.1.d	using technology to generate displays, summary statistics, and presentations		
E.12.2	Organize and display data from statistical investigations using		
E.12.2.a	frequency distributions		
E.12.2.b	percentiles, quartiles, deciles		
E.12.2.c	line of best fit (estimated regression line)		
E.12.2.d	matrices		
E.12.3	Interpret and analyze information from organized and displayed data when given		
E.12.3.a	measures of dispersion, including standard deviation and variance		
E.12.3.b	measures of reliability		
E.12.3.c	measures of correlation		

E.12.4	Analyze, evaluate, and critique the methods and conclusions of statistical experiments reported in journals, magazines, news media, advertising, etc.		
E.12.5	Determine the likelihood of occurrence of complex events by		
E.12.5.a	using a variety of strategies (e.g., combinations) to identify possible outcomes		
E.12.5.b	conducting an experiment		
E.12.5.c	designing and conducting simulations		
E.12.5.d	applying theoretical probability		
F.12	Algebraic Relationships		
F.12.1	Analyze and generalize patterns of change (e.g., direct and inverse variation) and numerical sequences, and then represent them with algebraic expressions and equations		
F.12.2	Use mathematical functions (e.g., linear, exponential, quadratic, power) in a variety of ways, including		
F.12.2.a	recognizing that a variety of mathematical and real-world phenomena can be modeled by the same type of function		
F.12.2.b	translating different forms of representing them (e.g., tables, graphs, functional notation, formulas)		
F.12.2.c	describing the relationships among variable quantities in a problem		
F.12.2.d	using appropriate technology to interpret properties of their graphical representations (e.g., intercepts, slopes, rates of change, changes in rates of change, maximum, minimum)		
F.12.3	Solve linear and quadratic equations, linear inequalities, and systems of linear equations and inequalities		
F.12.3.a	numerically		
F.12.3.b	graphically, including use of appropriate technology		



F.12.3.c	symbolically, including use of the quadratic formula		
F.12.4	Model and solve a variety of mathematical and real-world problems by using algebraic expressions, equations, and inequalities		