Albuquerque Public Schools
High School District Benchmark Assessment
Geometry Assessment Alignment 2009

PROCESS STANDARDS

To help New Mexico students achieve the Content Standards enumerated below, teachers are encouraged to base instruction on the following Process Standards:

These standards should be embedded in the classroom assessment and instruction.

Problem Solving • Build new mathematical knowledge through problem solving • Solve problems that arise in mathematics and other contexts • Apply and adapt a variety of appropriate strategies to solve problems, and • Monitor and reflect on the process of problem solving.	**Connections** • Recognize and use connections among mathematical ideas, • Understand how mathematical ideas interconnect and build on one another to produce a coherent whole, and • Recognize and apply mathematics in contexts outside of mathematics.
Reasoning and Proof • Recognize reasoning and proof as fundamental aspects of mathematics, • Make and investigate mathematical conjectures, • Develop and evaluate mathematical arguments and proofs, and • Select and use various types of reasoning and methods of proof.	**Representation** • Create and use representations to organize, record, and communicate mathematical ideas, • Select, apply, and translate among mathematical representations to solve problems, and • Use representations to model and interpret physical, social, and mathematical phenomena.
Communication • Organize and consolidate their thinking through communication, • Communicate their mathematical thinking coherently and clearly to peers, teachers, and others, • Analyze and evaluate the mathematical thinking and strategies of others, • Use the language of mathematics to express mathematical ideas precisely, and • Describe mathematical concepts using developmentally appropriate definitions.	

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Strand III: Geometry and Trigonometry			
Content Standard: Student will understand geometric concepts and applications. **Benchmark G.1: Analyze characteristics and properties of two- and three-dimensional geometric shapes and develops mathematical arguments about geometric relationships.**			
Performance Standards	**Form 1 34 Quest.**	**Form 2 36 Quest.**	**Form 3 38 Quest.**
G.1.1 Understand that numerical values associated with the measurements of physical quantities must be assigned units of measurement or dimensions; apply such units correctly in expressions, equations and problem solutions that involve measurements; and convert a measurement using one unit of measurement to another unit of measurement.	1 Question	1 Question	
G.1.2 Finds the area and perimeter of a geometric figure composed of a combination of two or more rectangles, triangles, and/or semicircles with just edges in common.	2 Questions		3 Questions
G.1.3 Draws three-dimensional objects and calculate the surface areas and volumes of these figures (e.g., prisms, cylinders, pyramids, cones, spheres), as well as figures constructed from unions of prisms with faces in common, given the formulas for these figures.			7 Questions
G.1.4 Identify the hypothesis and conclusion in examples of conditional statements.	4 Questions	2 Questions	
G.1.5 Use definitions in making logical arguments.	2 Question	4 Questions	1 Question
G.1.6 Use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute a universal statement (contains a phrase such as “for every” or “for all”).	3 Questions		
G.1.7 Explain the difference between inductive and deductive reasoning and provide examples of each.	6 Questions		
G.1.8 Explain why, for inductive reasoning, showing a statement is true for a finite number of examples does not show it is true for all cases unless the cases verified are all possible cases.			
G.1.9 Write geometric proofs, including proofs by contradiction, and perform and explain basic geometric constructions related to: theorems involving the properties of parallel and perpendicular lines, circles, and polygons; theorems involving complementary, supplementary, and congruent angles; theorems involving congruence and similarity; and the Pythagorean theorem.	6 Questions	16 Questions	7 Questions
G.1.10 Recognize there are geometries, other than Euclidean geometry, in which the parallel postulate is not true.			

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Benchmark G.2: Specify locations and describes spatial relationships using coordinate geometry and other representational systems.			
G.2.1 Identify the origin, coordinate axes, and four quadrants on the Cartesian coordinate plane, and draw and label them correctly.			
G.2.2 Determines the midpoint and distance between two points within a coordinate system and relates these ideas to geometric figures in the plane (e.g., finds the center of a circle given two endpoints of a diameter of the circle).	3 Quest.	2 Quest.	
G.2.3 Uses basic geometric ideas (e.g., the Pythagorean theorem, area, and perimeter) in the context of the Cartesian coordinate plane (e.g., calculate the perimeter of a rectangle with integer coordinates and with sides parallel to the coordinate axes, and of a rectangle with sides not parallel).	2 Quest.	2 Quest.	
Benchmark G3: Apply transformations and use symmetry to analyze mathematical situations.			
G.3.1 Use rigid motions (compositions of reflections, translations and rotations) to determine whether two geometric figures are congruent in a coordinate plane.			
G.3.2 Sketch a planar figure that is the result of given transformations (i.e., translation, reflection, rotation, and/or dilation).			3 Questions
G.3.3 Identify similarity in terms of transformations.			
G.3.4 Determine the effects of transformations on linear and area measurements of the original planar figure.			
Benchmark G4: Use visualization, spatial reasoning, and geometric modeling to solve problems			
G.4.1 Solves contextual problems using congruence and similarity relationships of triangles (e.g., find the height of a pole given the length of its shadow).			5 Questions
G.4.2 Solves problems involving complementary, supplementary, and congruent angles.	5 Quest.	9 Quest.	
G.4.3 Know that the effect of a scale factor k on length, area and volume is to multiply each by k, k^2 and k^3, respectively.			3 Questions
G.4.4 Solves problems using the Pythagorean theorem.			5 Questions
G.4.5 Understand how similarity of right triangles allows the trigonometric functions sine, cosine, and tangent to be defined as ratios of sides and be able to use these functions to solve problems.			1 Question
G.4.6 Apply trigonometric functions to solve triangle problems.			2 Questions
G.4.7 Use angle and side relationships in problems with special right triangles (e.g., 30-, 45-, 60-, and 90-degree triangles).			1 Question
G.4.8 Describe the intersection of a line and a plane, intersections of lines in the plane and in space, or two planes in space.			

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Summary of the Geometry Standards Assessed on the District Benchmark Assessment (DBA)

Fall DBA standards & (items): G.1.1 - (1), G.1.2 - (2), G.1.4 - (4), G.1.5 - (2), G.1.6 - (3), G.1.7 - (6), G.1.9 - (6), G.2.2 – (3), G.2.3 – (2), G.4.2 – (5). Total items = 34.

Winter DBA standards & (items): G.1.1 - (1), G.1.4 - (2), G.1.5 - (4), G.1.9 - (16), G.2.2 - (2), G.2.3 - (2), G.4.2 – (9). Total items = 36.

Spring DBA standards & (items): G.1.2 - (2), G.1.3 - (5), G.1.5 - (1), G.1.9 - (7), G.1.12 - (1), G.1.13 - (2), G.3.2 – (3), G.4.1 – (5), G.4.3 – (3), G.4.4 - (5), G.4.5 – (1), G.4.6 - (2), G.4.7 - (1). Total items = 38.