MATH
Learning Expectations for Geometry

CRLS Learning Expectations	Mass. Standard	Topic/Theme	Key Understandings	Assessments/Evidence
	G.G.1	Geometry	Students will: Recognize special types of polygons (e.g., isosceles triangles, parallelograms, and rhombuses). Apply properties of sides, diagonals, and angles in special polygons; identify their parts and special segments (e.g., altitudes, midsegments); determine interior angles for regular polygons. Draw and label sets of points such as line segments, rays, and circles. Detect symmetrics of geometric figures.	
	G.G.2		Write simple proofs of theorems in geometric situations, such as theorems about congruent and similar figures, parallel or perpendicular lines. Distinguish between postulates and theorems. Use inductive and deductive reasoning, as well as proof by contradiction. Given a conditional statement, write its inverse, converse, and contrapositive.	
	G.G.3		Apply formulas for a rectangular coordinate system to prove theorems.	
	G.G.4		Draw congruent and similar figures using a compass, straightedge, protractor, or computer software. Make conjectures about methods of construction. Justify the conjectures by logical arguments.	
	G.G.5		Apply congruence and similarity correspondences (e.g., DABC@DXYZ) and properties of the figures to find missing parts of geometric figures, and provide logical justification.	

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	G.G.6	Geometry	Students will: Apply properties of angles, parallel lines, arcs, radii, chords, tangents, and secants to solve problems.	
	G.G.7		Solve simple triangle problems using the triangle sum property, and/or the Pythagorean theorem.	
	G.G.8		Use the properties of special triangles (e.g., isosceles, equilateral, 30, 60, 90, 45, 45, 90 degrees) to solve problems.	
	G.G.9		Define the sine, cosine, and tangent of an acute angle. Apply to the solution of problems.	
	G.G.10		Apply the triangle inequality and other inequalities associated with triangles (e.g., the longest side is opposite the greatest angle) to prove theorems and solve problems.	
	G.G.11		Demonstrate an understanding of the relationship between various representations of a line. Determine a line's slope and x-and y-intercepts from its graph or a geometric description of the line, e.g., by using the "point-slope" or "slope y-intercept" formulas. Explain the significant of a positive, negative, zero, or undefined slope.	
	G.G.12		Using rectangular coordinates, calculate midpoints of segments, slopes of lines and segments, and distances between two points, and apply the results to the solutions of problems.	
	G.G.13		Find linear equations that represent lines either perpendicular or parallel to a given line and through a point, e.g., by using the "point-slope" form of the equation.	
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	G.G.14	Geometry	Students will: Demonstrate an understanding of the relationship between geometric and algebraic representations of circles.	
	G.G.15		Draw the results, and interpret transformations on figures in the coordinate plane, e.g., translations, reflections, rotations, scale factors, and the results of successive transformations. Apply transformations to the solution of problems.	
	G.G.16		Demonstrate the ability to visualize solid objects and recognize their projections and cross sections.	
	G.G.17		Use vertex-edge graphs to model and solve problems.	
	G.G.18		Use the notion of vectors to solve problems. Describe addition of vectors and multiplication of a vector by a scalar, both symbolically and pictorially. Use vector methods to obtain geometric results.	
	G.M.1	Measurement	Calculate perimeter, circumference, and area of common geometric figures such as parallelograms, trapezoids, circles, and triangles.	
	G.M.2		Given the formula, find the lateral area, surface area, and volume of prisms, pyramids, spheres, cylinders, and cones, e.g., find the volume of a sphere with a specified surface area.	
	G.M.3		Relate changes in the measurement of one attribute of an object to changes in other attributes, e.g., how changing the radius or height of a cylinder affects its surface area or volume.	

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	G.M.4 G.M.5	Measurement	Students will: Describe the effects of approximate error in measurement and rounding on measurements and on computed values from measurements. Use dimensional analysis for unit conversion and to confirm that expressions and equations make sense.	