Benchmark	Notes
MA.912.D.6.2 Find the converse, inverse, and contrapositive of a statement. Also assesses **MA.912.D.6.3** Determine whether two propositions are logically equivalent.	
MA.912.G.1.1 Find the lengths and midpoints of line segments in two-dimensional coordinate systems.	
MA.912.G.1.3 Identify and use the relationships between special pairs of angles formed by parallel lines and transversals.	
MA.912.G.2.2 Determine the measures of interior and exterior angles of polygons, justifying the method used.	
MA.912.G.2.3 Use properties of congruent and similar polygons to solve mathematical or real-world problems. Also assesses: **MA.912.G.2.1** Identify and describe convex, concave, regular, and irregular polygons. **MA.912.G.4.1** Classify, construct, and describe triangles that are right, acute, obtuse, scalene, isosceles, equilateral, and equiangular. **MA.912.G.4.2** Define, identify, and construct altitudes, medians, angle bisectors, perpendicular bisectors, orthocenter, centroid, incenter, and circumcenter. **MA.912.G.4.4** Use properties of congruent and similar triangles to solve problems involving lengths and areas. **MA.912.G.4.5** Apply theorems involving segments divided proportionally.	
MA.912.G.2.4 Apply transformations (translations, reflections, rotations, dilations, and scale factors) to polygons to determine congruence, similarity, and symmetry. Know that images formed by translations, reflections, and rotations are congruent to the original shape. Create and verify tessellations of the plane using polygons.	
MA.912.G.2.5 Explain the derivation and apply formulas for perimeter and area of polygons (triangles, quadrilaterals, pentagons, etc.). Also assesses **MA.912.G.2.7** Determine how changes in dimensions affect the perimeter and area of common geometric figures.	
MA.912.G.3.3 Use coordinate geometry to prove properties of congruent, regular, and similar quadrilaterals.	
MA.912.G.3.4 Prove theorems involving quadrilaterals. Also assesses: **MA.912.G.3.1** Describe, classify, and compare relationships among quadrilaterals including the square, rectangle, rhombus, parallelogram, trapezoid, and kite. **MA.912.G.3.2** Compare and contrast special quadrilaterals on the basis of their properties. **MA.912.G.8.5** Write geometric proofs, including proofs by contradiction and proofs involving coordinate geometry. Use and compare a variety of ways to present deductive proofs, such as flow charts, paragraphs, two-column, and indirect proofs.	
MA.912.G.4.6 Prove that triangles are congruent or similar and use the concept of corresponding parts of congruent triangles. Also assesses: **MA.912.D.6.4** Use methods of direct and indirect proof and determine whether a short proof is logically valid. **MA.912.G.8.5** Write geometric proofs, including proofs by contradiction and proofs involving coordinate geometry. Use and compare a variety of ways to present deductive proofs, such as flow charts, paragraphs, two-column, and indirect proofs.	
MA.912.G.4.7 Apply the inequality theorems: triangle inequality, inequality in one triangle, and the Hinge Theorem.	

Benchmark	Notes
MA.912.G.5.4 Solve real-world problems involving right triangles. Also assesses: **MA.912.G.5.1** Prove and apply the Pythagorean Theorem and its converse. **MA.912.G.5.2** State and apply the relationships that exist when the altitude is drawn to the hypotenuse of a right triangle. **MA.912.G.5.3** Use special right triangles (30° - 60° - 90° and 45° - 45° - 90°) to solve problems.	
MA.912.G.6.5 Solve real-world problems using measures of circumference, arc length, and areas of circles and sectors. Also assesses: **MA.912.G.6.2** Define and identify: circumference, radius, diameter, arc, arc length, chord, secant, tangent and concentric circles. **MA.912.G.6.4** Determine and use measures of arcs and related angles (central, inscribed, and intersections of secants and tangents).	
MA.912.G.6.6 Given the center and the radius, find the equation of a circle in the coordinate plane or given the equation of a circle in center-radius form, state the center and the radius of the circle. Also assesses: **MA.912.G.6.7** Given the equation of a circle in center-radius form or given the center and the radius of a circle, sketch the graph of the circle.	
MA.912.G.7.1 Describe and make regular, non-regular, and oblique polyhedra, and sketch the net for a given polyhedron and vice versa. Also Assesses: **MA.912.G.7.2** Describe the relationships between the faces, edges, and vertices of polyhedra.	
MA.912.G.7.5 Explain and use formulas for lateral area, surface area, and volume of solids. Also assesses: **MA.912.G.7.4** Identify chords, tangents, radii, and great circles of spheres. **MA.912.G.7.6** Identify and use properties of congruent and similar solids.	
MA.912.G.7.7 Determine how changes in dimensions affect the surface area and volume of common geometric solids. Also assesses: **MA.912.G.2.7** Determine how changes in dimensions affect the perimeter and area of common geometric figures.	
MA.912.G.8.4 Make conjectures with justifications about geometric ideas. Distinguish between information that supports a conjecture and the proof of a conjecture.	
MA.912.T.2.1 Define and use the trigonometric ratios (sine, cosine, tangent, cotangent, secant, cosecant) in terms of angles of right triangles.	
EMBEDDED THROUGHOUT: **MA.912.G.8.1** Analyze the structure of Euclidean geometry as an axiomatic system. Distinguish between undefined terms, definitions, postulates, and theorems.	
MA.912.G.8.2 Use a variety of problem-solving strategies, such as drawing a diagram, making a chart, guess-and-check, solving a simpler problem, writing an equation, and working backwards.	
MA.912.G.8.3 Determine whether a solution is reasonable in the context of the original situation.	
NOT ASSESSED: **MA.912.G.1.2** Construct congruent segments and angles, angle bisectors, and parallel and perpendicular lines using straight edge and compass or a drawing program, explaining and justifying the process used. **MA.912.G.4.3** Construct triangles congruent to given triangles. **MA.912.G.8.6** Perform basic constructions using straightedge and compass, and/or drawing programs describing and justifying the procedures used. Distinguish between sketching, constructing, and drawing geometric figures.	