Cord Geometry, Mathematics in Context, 3rd edition
correlation to West Virginia Geometry Content Standards and Objectives

Indicators	**Cord Geometry Lesson(s)**
Standard M.S.G.3: Through communication, representation, reasoning and proof, problem solving, and making connections within and beyond the field of mathematics, students will • analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships, • specify locations and describe spatial relationships using coordinate geometry and other representational systems, • apply transformations and use symmetry to analyze mathematical situations, and • solve problems using visualization, spatial reasoning, and geometric modeling.	
M.O.G.3.1 represent geometric figures, such as points, lines, planes, segments, rays, and angles pictorially with proper identification and distinguish between undefined and defined terms.	1.1, 1.2, 1.3
M.O.G.3.2 differentiate and apply inductive and deductive reasoning, justify conclusions in real-world settings.	2.1, 2.2
M.O.G.3.3 use the basic concepts of symbolic logic including identifying the converse, inverse, and contrapositive of a conditional statement and test the validity of conclusions with methods that include Venn Diagrams.	2.3
M.O.G.3.4 validate conclusions by constructing logical arguments using both formal and informal methods with direct and indirect reasoning.	2.4, 2.5, 2.6, 2.7, 2.8
M.O.G.3.5 construct formal and informal proofs by applying definitions, theorems, and postulates related to such topics as • complementary, • supplementary, • vertical angles, • angles formed by perpendicular lines, and justify the steps.	2.6, 2.7, 2.8
M.O.G.3.6 compare and contrast the relationships between angles formed by two lines cut by a transversal when lines are parallel and when they are not parallel, and use the results to develop concepts that will justify parallelism.	2.8

M.O.G.3.7 make conjectures and justify congruence relationships with an emphasis on triangles and employ these relationships to solve problems.	3.4, 3.5, 3.6, 3.7
M.O.G.3.8 identify general properties of and compare and contrast the properties of convex and concave quadrilaterals • parallelograms • rectangles • rhombuses • squares • trapezoids	6.1, 6.2, 6.3, 6.4, 6.5, 6.6
M.O.G.3.9 identify a real life situation that involves similarity in two or three dimensions; pose a question; make a hypothesis as to the answer, develop, justify, and implement a method to collect, organize, and analyze related data; generalize the results to make a conclusion; compare the hypothesis and the conclusion; present the project numerically, analytically, graphically and verbally using the predictive and analytic tools of algebra and geometry (with and without technology).	4.2, 4.3, 4.4
M.O.G.3.10 investigate measures of angles and lengths of segments to determine the existence of a triangle (triangle inequality) and to establish the relationship between the measures of the angles and the length of the sides (with and without technology).	3.2, 3.3
M.O.G.3.11 verify and justify the basis for the trigonometric ratios by applying properties of similar triangles and use the results to find inaccessible heights and distances. Using the ratios of similar triangles to find unknown side lengths and angle measures, construct a physical model that illustrates the use of a scale drawing in a real-world situation.	4.3, 4.4, 4.5, 5.4, 5.5
M.O.G.3.12 apply the Pythagorean Theorem and its converse to solve real-world problems and derive the special right triangle relationships (i.e. 30-60-90, 45-45-90).	5.2
M.O.G.3.13 investigate measures of angles formed by chords, tangents, and secants of a circle and draw conclusions for the relationship to its arcs.	9.2, 9.3, 9.4, 9.5

M.O.G.3.14 find angle measures of interior and exterior angles; given a polygon, find the length of sides from given data; and use properties of regular polygons to find any unknown measurements of sides or angles.	3.1, 6.2
M.O.G.3.15 develop properties of tessellating figures and use those properties to tessellate the plane.	11.6
M.O.G.3.16 derive and justify formulas for area, perimeter, surface area, and volume using nets and apply them to solve real-world problems.	8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 10.3, 10.4, 10.5, 10.6, 10.7
M.O.G.3.17 apply concepts of analytical geometry such as formulas for distance, slope, and midpoint and apply these to finding dimensions of polygons on the coordinate plane.	7.1, 7.2, 7.3, 7.4, 7.5
M.O.G.3.18 construct a triangle's medians, altitudes, angle and perpendicular bisectors using various methods; and develop logical concepts about their relationships to be used in solving real-world problems.	1.4, 3.8
M.O.G.3.19 create and apply concepts using transformational geometry and laws of symmetry, of a • reflection, • translation, • rotation, • glide reflection, • dilation of a figure, and develop logical arguments for congruency and similarity.	11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7
M.O.G.3.20 compare and contrast Euclidean geometry to other geometries (i.e. spherical, elliptic) using various forms of communication such as development of physical models, oral or written reports.	1.1 (Euclidean defined), 3.1 (spherical)
M.O.G.3.21 approximate the area of irregularly shaped regions based on the approximations and the attributes of the related region, develop a formula for finding the area of irregularly shaped regions. Plan, organize and present results by justifying conclusions.	8.1, 8.2, Chapter 8 Math Applications (pp. 500-509 #s 1, 4, 7, 8, 11, 13)