Grade/Content Area: Secondary Math CP2 Geometry **GRADE LEVEL/CONTENT AREA GUIDE**

Big Understandings of the Content Area

*Applying logic and reasoning
*Understanding geometric figures and their relationships
*Determining measures of length, area and volume
*Using coordinate geometry to explore geometric concepts

Content Standards **A. NUMBERS AND NUMBER SENSE: Students will understand and demonstrate a sense of what numbers mean and how they are used.**	**B. COMPUTATION: Students will understand and demonstrate computation skills.**		**D. PROBABILITY: Students will understand and apply concepts of probability.**	**E. GEOMETRY: Students will understand and apply concepts from geometry.**	**F. MEASUREMENT: Students will understand and demonstrate measurement skills.**
Performance Indicators Students will be able to: ♦ Understand basic definitions of exponents and roots	**Performance Indicators** Students will be able to: ♦ Use various techniques to approximate solutions, determine the reasonableness of answers, and justify the results.		**Performance Indicators** Students will be able to: ♦ Find the probability of compound events and make predictions by applying probability theory.	**Performance Indicators** Students will be able to: ♦ Draw coordinate representations of geometric figures and their transformations. ♦ Use inductive and deductive reasoning to explore and determine the properties of and relationships among geometric figures. ♦ Apply trigonometry to problem situations involving triangles and periodic phenomena. ♦ Understand the relationship between parallel, perpendicular, or oblique lines. ♦ Understand the Pythagorean Theorem and use it to solve problems. ♦ Classify figures based on congruence and solve problems using this concept. ♦ Classify figures based on similarity and solve problems using this concept. ♦ Use geometric models to solve problems in two or three dimensions.	**Performance Indicators** Students will be able to: ♦ Use measurement tools and units appropriately and recognize limitations in the precision of the measurement tools. ♦ Derive and use formulas for area, surface area, and volume of many types of figures.

				• Perform transformations (translations, rotations, dilations) on geometric shapes. • Use properties of lines to describe figures algebraically.	

Knowledge/Skills • Use rules for square roots. • Use Pythagorean Theorem.	Cross-cutting: used in all areas		Use geometric models to calculate probabilities.	Recognize parallel and perpendicular lines Perform basic constructions using compass and straight edge. Identify and use inductive and deductive reasoning. Write two-column proofs. Write paragraph proofs. Relate perpendicular lines and right angles. Identify pairs of angles formed by parallel lines and a transversal. Prove lines parallel based on angle relationships. Identify corresponding parts of congruent triangles. Prove triangles congruent. Solve problems using CPCTC. Analyze properties of isosceles triangles. Understand properties of altitudes, medians, and perpendicular bisectors in a triangle. Solve problems using the Perpendicular Bisector Theorem and the Angle Bisector Theorem. Determine measures of interior and exterior angles of polygons. Classify quadrilaterals. Identify and use properties of rectangles, rhombuses, and squares. Identify and use the properties of trapezoids. Identify similar polygons. Use proportions in similar triangles. Use proportions in right	Find the measures of segments and angles. Use the distance and midpoint formulas. Use vectors to represent distances. Understand the meaning of area of a plane figure. Solve problems involving the area of parallelograms, triangles and trapezoids. Solve problems involving the area of circle, sector of a circle. Calculate the surface area and volume of prisms, cylinders, pyramids and cones. Solve problems involving the surface area and volume of solids.

				triangles. Prove and use the Pythagorean Theorem. Identify special right triangles and their properties. Use sin, cos, and tan to solve right triangle problems. Investigate the properties of vectors in the coordinate plane. Solve problems involving the circumference of a circle. Draw objects with perspective. Identify and use the properties of tangent, chord, and secant. Map preimages into images using reflection, translation, and rotation. Make compositions of transformations. Use congruent shapes to tessellate a planar region. Use transformations in the coordinate plane. Use dilations.	
Assessment ♦ Quizzes ♦ Daily tasks ♦ Test ♦ Models ♦ Projects	SAME **LAS: Boats and Ambulances**		SAME	SAME **LAS: Boats and Ambulances** **LAS: Dude on a Cliff**	SAME **LAS: Boxes R Us**
Resources ♦ Cord Geometry	♦ SAME		♦ SAME	♦ SAME	♦ SAME
Instructional Strategies ♦ Lecture	♦ SAME		♦ SAME	♦ SAME	♦ SAME

• Experiment (Discovery) • Cooperative Learning					

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Content Standards **G. PATTERNS, RELATIONS, FUNCTIONS: Students will understand that mathematics is the science of patterns, relationships, and functions.**	**H. ALGEBRA CONCEPTS: Students will understand and apply algebraic concepts.**	**I. DISCRETE MATHEMATICS: Students will understand and apply concepts in discrete mathematics.**	**J. MATHEMATICAL REASONING: Students will understand and apply concepts of mathematical reasoning.**	**K. MATHEMATICAL COMMUNICATION: Students will reflect upon and clarify their understanding of mathematical ideas and relationships.**	
Performance Indicators Students will be able to: ♦ Create a graph to represent a real-life situation and draw inferences from it. ♦ Translate and solve a real-life problem using symbolic language. ♦ Model phenomena using linear functions.	**Performance Indicators** Students will be able to: ♦ Use tables, graphs, and spreadsheets to interpret expressions, equations, and inequalities. ♦ Formulate and solve linear equations and inequalities ♦ Analyze and explain situations using symbolic representations.	**Performance Indicators** Students will be able to: ♦ Use networks to find solutions to problems	**Performance Indicators** Students will be able to: ♦ Analyze situations where more than one logical conclusion can be drawn from data presented. ♦ Use inductive reasoning to make conjectures. ♦ Test conjectures deductively by verification or by using counter-examples. ♦ Support reasoning by using models, known facts, properties, or relationships.	**Performance Indicators** Students will be able to: ♦ Restate, create, and use definitions in mathematics to express understanding, classify figures, and determine the truth of a proposition or argument. ♦ Read mathematical presentations of topics within the Learning Results with understanding. ♦ Use appropriate terminology and notation.	
Knowledge/Skills ♦ Use the slope formula. ♦ Formulate linear equations. ♦ Graph linear equations.	Solve problems using special angle pairs. Solve problems using the Triangle Inequality Theorem. Solve problems using ratio and proportion. Use the slope formula to solve problems. Use linear equations to solve problems. Use the equation of a circle. Identify and use the relationships between central angles, inscribed angles, and arcs.	Understand connected, traversable and shortest-route networks.	Analyze the converse, inverse, and contrapositive of a conditional statement. Construct logic chains. Use different styles of proofs (direct, indirect; two-column, paragraph) to write convincing arguments.	Identify basic geometric figures. Identify parts of a conditional. Identify and define polygons. Classify quadrilaterals.	

Assessment ♦ Quizzes ♦ Daily Tasks ♦ Test ♦ Models ♦ Projects	♦ SAME	SAME **LAS: Exploring Networks**	SAME **LAS: Boats and Ambulances**	SAME	
Resources ♦ Cord Geometry	♦ SAME	♦ SAME	♦ SAME	♦ SAME	
Instructional Strategies ♦ Lecture ♦ Experiment (Discovery) ♦ Cooperative Learning	♦ SAME	♦ SAME	♦ SAME	♦ SAME	